

Exploring the link between waste governance structures and livelihood options for urban waste pickers

On the potentials for securing livelihoods dependent on waste in the city of Bengaluru, India

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August 2021

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Acknowledgements

This thesis would not have been possible without the support of many amazing people. First of all, I would like to thank my University supervisor, Prof. Dr. Ajay Bailey for his friendly and constructive support and encouragement throughout the entire process. His regular inspirational advice strengthened me to pursue my research with new energy and motivation. I would also like to thank Dr. Shannon for providing me with thoughtful and useful feedback.

Many thanks to the respondents that participated to this research and contributed with their expertise and their insights from their work in the field. I am particularly grateful for their time given the difficult circumstances due to the covid pandemic. I hope this research provides interesting observations.

Lastly, I would like to thank my friends and family, who provided me with continuous uplifting mental support. Special thanks to Johannes Franke, who cheered me up in difficult moments and believed in me. To my mum, to whom I could express my concerns and thoughts from beginning to end. I also very much appreciate the valuable discussions with my fellow students Franziska Erbe and Linda Maiwald.

I am thankful that all these heart-warming people have allowed me to conduct research on such an interesting topic.

Summary

Megacities in the Global South are experiencing a rapid accumulation of waste, accelerated by increasing population growth coupled with consumption patterns. In spite of this, in India waste is still a highly neglected public service in the hands of the local government. The workers that contribute to keeping the cities clean are often part of a large informal sector. Previous studies on informal waste workers focus mainly on the question of their integration into the formal solid waste management (SWM) system. This thesis adopts a different approach that links the policy framework and institutional arrangements between SWM stakeholders to the livelihoods of waste pickers in Bengaluru. A multitude of different stakeholders shape the solid waste management landscape of Bengaluru, which has one the highest accumulations of waste as well as a large informal sector.

In order to understand how the livelihood options of waste workers are impacted by governance structures of SWM, a qualitative analysis (policy analysis, media analysis and semi-structured interviews) was conducted. While the policy and the media analysis provided an understanding of how SWM-related policies at various levels and news items represent waste workers, the interviews generated information on the practical experiences and perceptions of stakeholders working together with waste pickers.

The combination of these methodological approaches found that in the fast-changing solid waste management system in Bengaluru, source segregation and decentralised waste management are to play a growing role. The existing policy that allows waste pickers, if they are part of a formally recognised organisation, to operate decentralised facilities of recyclable waste, have a two-folded effect for waste pickers. Waste pickers that affiliate to non-governmental or community-based organisations and are willing to become part of a team, have the possibility to work in a professional environment, often meaning they grow out of miserable working conditions. The researcher pinpoints to highly vulnerable waste pickers, who are more likely to be excluded from such upgraded livelihood options.

The local media displays the variety of hardships that waste pickers face, as well as the multitude of “new” work modalities, such as working in a ward-level establishment. Therefore, this research emphasises the need of understanding their individual needs, rather than viewing them as a homogeneous group. In the future waste pickers’ precarity will depend on the municipality’s willingness to create a supportive environment, involve them in future outsourcing decisions and leverage their skills and knowledge on waste materials and the recycling market: becoming strong partners of the city to achieve a clean environment.

Key words: Solid waste management, urban governance, waste pickers, sustainable livelihoods, urban exclusion

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List of abbreviations

BBMP	Bruhat Bengaluru Mahanagara Palike
BMA	Bengaluru Metropolitan Area
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health & Environmental Engineering Organisation
DIFD	British Department for International Development
DWCC	Decentralised waste collection centre
IPA	Interpretive Policy Analysis
MoEFCC	Ministry of Environment, Forest and Climate Change
MoHUA	Ministry of Housing and Urban Affairs
MoU	Memorandum of Understanding
MoUD	Ministry of Urban Development
NGO	Non-governmental organisation
NULM	National Urban livelihoods Mission
KSPCB	Karnataka State Pollution Control Board
SDGs	Sustainable Development Goals
SHG	Self-help group
SL	Sustainable Livelihood
SWM	Solid Waste Management
ULB	Urban Local body

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1. Introduction

1.1 Background

Solid waste² management (SWM) is a key basic service that plays a crucial role in contributing to the qualities of a liveable city. It is taken for granted when it functions properly, however becomes an issue when the waste is not dealt with adequately. Poor waste management can cause the spread of infectious diseases to exposed residents or waste workers, in particular when mixed with harmful hazardous types of waste. Not addressing waste results in dumping and burning activities in open spaces, which has detrimental effects, polluting the air, soil, surface and groundwater, as far as coastal and marine environments (Wilson et al., 2015). Therefore, SWM has been a sustainability and development concern for the past decades and generally refers to activities that handle waste, including collection, transportation, processing and disposal (Wan et al., 2019; Vyas, 2010; Nathanson, 2020).

Substantially affecting all three dimensions of sustainability: ecology, economy and society, SWM is inherently linked to the UN's Sustainable Development Goals (SDGs). Although no SDG is specifically devoted uniquely to waste, the link between the SDGs and waste management is manifested in the targets of 12 out of 17 SDGs, highlighting its crosscutting character (Rodic & Wilson, 2017). These include goals related to sustainable cities and the protection of public health as well as clean water, life on land and responsible consumption and production, related to environmental protection. For instance, "Eliminating dumping, minimizing the release of hazardous chemicals and materials and substantially increasing recycling and safe reuse globally" are components of SDG 6, target 6.3 that recognize the health and environmental threats posed by uncontrolled waste practices (Rodic & Wilson, 2017). Minimizing the negative environmental impacts caused by landfilling would thus significantly contribute to the pursuit of sustainable development (Wan et al., 2019). SWM is also covered in the goals that focus on poverty and decent growth through the engagement of individuals and small enterprises engaged in service delivery (Rodic & Wilson, 2017). Furthermore, waste management can also be regarded as a basic human right, as it leads to a healthy, clean and safe environment. The recognition that the right to a healthy environment should be entitled to everyone and is as fundamental as other components of human well-being is being advocated and discussed at the UN-level (International Solid Waste Association, 2018).

² Throughout this study solid waste is understood as primarily non-liquid waste "that arise from human and animal activities and are discarded as useless or unwanted". Solid waste includes both organic and inorganic waste such as kitchen refuse, product packaging, grass clippings, cloth, bottles, paper, paint cans, batteries, etc., generated by society and does not hold any value for the first user anymore (Ramachandra et al., 2018)

As municipal solid waste is directly determined by population, standard of living and consumption patterns, which are coupled with economic growth (Khajuria et al., 2010), it becomes of particular concern in highly populated cities (Vyas, 2010). Particularly megacities in the “Global South” are experiencing a rapid accumulation of municipal waste, which continues to threaten the environment and people’s health. There is evidence that the societal and economic costs of not properly managing waste can amount to ten times the costs of a sound SWM system (Wilson et al., 2015). And yet SWM is often given less priority than other public services, such as water supply and health (Priti & Mandal, 2019; Kumar et al., 2017). In India waste was found to be the most neglected basic service delivered by its government, despite its rapid increase (Srivastava et al., 2015). While India’s population has doubled between 1975-2010, waste generation has tripled in this period (Singh et al., 2011). Handling the volumes of waste generated by a growing urban population entails significant challenges associated with the collection, transport, treatment, and disposal of waste (Kumar et al., 2017). It is estimated that 90% of the municipal solid waste (MSW) generated in metropolitan cities is dumped in the outskirts of the city, without undergoing scientific disposal, such as sanitary landfilling, which has detrimental impacts for health and environment (Sharholly et al., 2008). Thus, the call for moving from open dumping to safe and scientific processing and disposal methods while at the same time retaining a maximum value from waste is ubiquitous (Sharholly et al., 2008; Kumar et al., 2017; Singh, 2020).

1.2 Problem definition and knowledge gap

At its beginnings the field of SWM was mainly analysed from a technological perspective (Nathanson, 2020), in search for advanced engineering solutions required for proper processing and disposal of waste (Rodic & Wilson, 2017). However, this has been criticized by some authors, who argue that technology alone cannot improve the social, environmental and economic issues linked to SWM (Kumar et al., 2017; Gupta et al., 2015). Although there appears to be a growing body of literature that empirically puts SWM systems in relation to the governance of a specific city or region of the Global South, Priti & Mandal (2019) argue that in India, governance structures have not been addressed as extensively as technical aspects. And yet, as in many developing countries, a continuous increase in urbanization and industrialization, has left local authorities faced with the challenge of a growing demand for public services that far exceeds supply (Gowda et al., 2013).

In India, solid waste management in the cities falls into the responsibility of the so-called urban local bodies (ULBs), tasked with the planning, implementation and monitoring of essential urban services (Singh, 2020). However, there is abundant literature that emphasizes a multitude of deficiencies behind the ineffectiveness of the current waste system. It is accepted that ULBs are constrained by a lack of financial funds, resources, infrastructure, political will and poor institutionalization to adequately fulfil their task (Singh, 2020; Priti & Mandal, 2019). Where municipal services fail to process and recycle the waste, informal workers come into the scene to fill this gap (Dias, 2016). The term “informal” refers to individuals or small enterprises that are not recognized by formal authorities and do not benefit from a registered status (Schüberler et al., 1996). The SWM sector in India involves 1.5 million workers

whose livelihoods depend on collecting, separating, transporting and selling garbage and take thus part in the Indian informal economy (Priti & Mandal, 2019).

Dias (2016) and a growing body of evidence emphasizes the contributions of informal waste workers to the SWM of cities. As key actors they create both environmental and economic value to a city. More specifically, they contribute to the recovery of materials, which would otherwise have been “lost”, by providing them to the recycling market. Although the informal sector greatly contributes to the quality of life desired by city administrators, scholars criticize that their important role is not appropriately recognized (Gidwani, 2015).

1.3 Previous research on informal waste workers

Previous studies on waste labour in the Global South provide evidence for the many health issues and hazards associated with the work of informal recyclers. Binion & Gutberlet (2012), found a range of diseases, illnesses and injuries linked to the occupation and Majeed et al. (2017) observed that medically contaminated materials were a problematic source of infections, which were more prevalent amongst waste pickers than for non-waste workers. The health threats they are exposed to are exacerbated by their lack of access to the necessary health services and more in general any type of social protection (Majeed et al., 2017; Schüberler et al., 1996). Furthermore, studies show that workers face poor compensation, no employee protection and are subject to regular stigmatization, which was found to heavily affect their emotional well-being (Binion & Gutberlet, 2012; Gidwani, 2015). The mental, physical, social and spiritual well-being of women waste workers was assessed in another study by Wittmer (2020) exploring their own perceptions. The study finds that, despite the hazards and precarity of waste picking, women perceived their livelihood as important and meaningful, allowing them to benefit from independence and flexibility, as they navigate through the poverty and precarity of their urban lives. It is essential to note that the participants assess their situation comparing to past experiences, to people and work in their physical spaces and to their value system. Social relations were found to be highly pronounced and substantially contribute to their well-being. Nevertheless, Wittmer (2020) points to the need of considering broader structural exclusion and urban marginalization issues. Drawing from these studies, informal waste workers are therefore understood as being “the main victims of the SWM system” (Majeed et al., 2015, p. 815) and “positioned at the bottom at local waste economies” (Wittmer, 2020). Social discrimination and exclusion can thus be seen as an outcome of the SWM system, but also as an underlying cause for which people undertake this occupation. Belonging to a certain caste or ethnicity might force them into working with waste (Schüberler et al., 1996; Wittmer, 2020).

The literature on informal waste workers tends to be divided into two schools of thought. On one side there is a widespread acceptance amongst some scholars that call for the integration of informal waste recyclers into the formal system (Dias, 2016; Annepu, 2012; Gerdes & Gunsilius, 2010; Kumar et al., 2017). According to these authors, integrating waste pickers into the formal system is argued to reduce

structural inequalities and result in more dignified conditions and enhanced livelihoods. However, others point to the risks posed to waste workers' livelihoods when formalizing the waste system without taking into account the existing informal services and promoting their working and living conditions (Wilson et al., 2006; Sembiring & Nitivattananon 2010). Concerns also relate to poor employment opportunities and harsh competition in the formal sector. Coupled to an increased mechanized system and workers' lack of capital or managerial experience, their livelihoods could easily be threatened (Marello & Helwege, 2017).

1.4 Relevance of research

This shows that integration of informal waste workers in the Global South is widely studied. Rather than focusing on the question of formalizing or not, implying a strict distinction between formality and informality, this study takes a governance lens for addressing urban social inequalities in the waste sector. It explores the link between institutions involved in SWM and the livelihoods of waste workers³, which has not yet been addressed. As observed by Cornea et al. (2017) solid waste is a political issue, besides simply being a managerial one. However, the way how governance, understood as the holistic ensemble of stakeholders, institutions and policy content, determines the livelihood options of informal waste workers has not been investigated. Therefore, this study aims at taking a broader urban governance and institutional perspective to better identify and understand what institutional or policy arrangements affect their livelihood options. It thereby contributes to expanding the knowledge on the impact of existing policies and innovative governance structures on the livelihoods of waste workers. It is hoped that connecting the macro to a more micro level will bring new insights to policy makers for creating a more inclusive SWM.

1.5 Research objective and research questions

By taking the city of Bengaluru as the main analytical unit of this study, the research aims at linking the current governance structures for SWM to the livelihoods of marginalized workers in the waste sector. This is done firstly by identifying the principal stakeholders involved in the city's waste management and examining the principal policies and rules related to SWM. Second, the extent to which institutions and public policies take into account inclusion and dignified working and living conditions is researched. Third, the underlying issues for social and economic exclusion in relation to current institutional arrangements are explored. Lastly, emerging forms of governance in relation to SWM and their opportunities for enhancing livelihoods are investigated.

³ This study examines and focuses on the livelihoods of informal waste pickers, without neglecting formal waste workers for the sake of completeness

1.5.1 Research questions:

Central research question:

How do existing and emerging governance structures of the Solid Waste Management (SWM) sector shape the livelihood options of informal waste pickers in Bengaluru, while addressing their urban exclusion?

Sub research questions:

- (1) What SWM-related policies at different levels (national, state, local) exist and how do they take into consideration waste pickers?
- (2) How are waste governance, waste pickers and their precarious livelihoods in relation to urban exclusion represented in the media?
- (3) What current forms of governance are emerging in Bengaluru, as developed in relation to SWM that ensure inclusive and sustainable livelihoods?
- (4) What are the barriers and opportunities for enhancing urban livelihoods of waste pickers and addressing their exclusion?

2. Theory

The following section explains the theoretical concepts that the study draws on: urban governance, southern urbanism, sustainable livelihoods and urban exclusion. The choice of an urban governance perspective is considered relevant for this research because it emphasises the interplay between the government and other non-state actors that move to the forefront in managing urban areas. Furthermore, a governance perspective is viewed as useful to analyse the position of the local government with regards to higher institutional levels, particularly for sub-question 1 (section 1.5.1). The co-management approach goes more into depth and recognises the active participation of citizens, individuals or collectives, in the management of public services. This approach serves as foundation to examine how responsibilities are shared and what type of arrangements exist between the relevant stakeholders.

Despite taking a different perspective, the “Southern urbanism” is incorporated into the theoretical framework, as it draws on some challenges encountered when “theorizing” Southern practices. Without meaning that Southern urbanism is shaped the same way in all Southern cities, the researcher takes into consideration certain characteristics found in the literature, such as uncertainty and dynamic advancement. These dynamics are likely to occur in the context of this research. It has to be noted that urban governance theories are not necessarily based on Global South experiences and might thus be seen as colliding with a Southern urban approach. However, these two perspectives are rather viewed as complementing each other and are believed to reflect the two perspectives of this research: the systems and governance perspective with the perspective of day-to-day practices.

The sustainable livelihood framework was chosen as it takes a holistic perspective on the multitude of dimensions that individuals rely on to make a living. This is believed to help examine on which capitals waste pickers rely on and determine their ability to construct sustainable livelihood strategies and outcomes. Finally, social and urban exclusion discussions are included, as they serve as a foundation for examining broader exclusionary mechanisms faced by waste pickers.

2.1 Theoretical reflection on urban governance

Governance theories recognize that the government is not alone in providing all public services, but that it can coordinate its activities with other actors in its environment (Ansell & Torfing, 2016). Analysing cities from an urban governance perspective is useful as it considers and emphasizes the multitude of actors, that along with the government shape the city life in most cities. Pierre (2011), a leading scholar in the field of urban governance underlines the importance it gives to understanding how cities are governed, by whom and how resources are allocated. According to Avis (2016) urban governance “involves a continuous process of negotiation and contestation over the allocation of social and material resources and political power”. However, as a result of the interplay between the power of the government and that of non-state actors, the role of local governments has increased in complexity. A

few characteristics that shape the nature of urban governance arise. First, some scholars are concerned with private actors, including business organizations, NGOs or consultants moving to the forefront of governing, while the power of public actors is likely to decline (Da Cruz et al., 2018). The consequences of greater private interest are not straightforward, however, one strand of literature indicates that it is associated with lower socioeconomic equality (Da Cruz et al., 2018). Second, local authorities are likely to face growing pressures not only from business and civil society (Pierre, 2011), but also from sub-national or national levels of government, lobbyists and “democratic concerns” (Mossberger & Stoker, 2001; Da Cruz et al., 2018). In fact, it should not be neglected that local governments are deeply embedded in their national context. Particularly national forces are plead to play a highly influential role for urban governance. Nation states have policies that are directed towards cities adding to their own institutional settings, constitutional arrangements (Pierre, 2011; Pierre, 1999). These legal and organizational responsibilities by states are argued to perhaps be constraining for local authorities in modifying an urban environment. Da Cruz et al. (2018) underline that cities in the Global South are often hindered by scarce financial resources and autonomy in their endeavour to meet the myriad of challenges they face. Hence, often city administrations are positioned as being rather weak.

For this thesis, an urban governance perspective enables the researcher to examine the local governments’ position without neglecting its embeddedness in higher governmental levels. Urban governance will further be understood as the interplay between the government and non-governmental stakeholders involved in the solid waste management.

2.1.1 A co-management approach to SWM

Besides the governance aspect of coordination between different government units, utility services in Global South cities, such as water, sanitation and also waste, are commonly associated with the concept of “co-production” or “co-management”, which is largely attributed to the field of public service management. Co-production suggests that citizens play an active part in the delivery of public services. Mitlin (2008) refers to it as the “joint production between citizen and the state”. Co-management goes one step further and is defined by the World Bank as “the sharing of responsibilities, rights and duties between the primary stakeholders, in particular, local communities and the nation state; a decentralized approach to decision-making that involves the local users in the decision-making process as equals with the nation-state” (Soeftestad, 1999). However, Carlsson and Berkes (2005) point out that inequality among stakeholders is not unlikely and joint management does not necessarily eradicate the hierarchies or power relations within a community. This research thus follows Carlsson and Berkes’s (2005) understanding of co-management as a dynamic and iterative process where actors and their activities may be continuously adjusted. The authors emphasize the process of a multi-stakeholder approach, where shared responsibilities should be seen as an end result of a collaborative process rather than the starting point. The provision of solid waste services relies on multiple actors, the concept of co-management is thus useful to understand the shared responsibilities and how the arrangements are configured, e.g. ways in which activities are performed jointly. Co-producers (citizens or users) can participate in different forms, either individually or collectively through cooperatives. Their level of

participation in decision-making and their involvement in a range of activities can vary. The international and scientific community now promotes the co-production of basic services particularly as a way for reaching the urban poor and informal settlements (Faldi et al., 2019).

2.2 Unravelling “Southern” urbanism

“Southern” urban theories have been highly contested, since theorizing the “South” entails the risk of overlooking the everyday realities from a particular part of the world. Some scholars in Southern urban theory attempt to address the disconnect between theory and practice by challenging conventional ways of thinking about Global South cities. For instance, Bhan (2019) questions the understanding that practice is limited to formal, institutional and professional actors. Rather, he suggests that the realities of existing modes of practices should be taken seriously by policy-makers. The certainty that people act in a predictable way that is frequently presumed by authorities should be questioned. One way of conceptualizing the “South” is by acknowledging certain characteristics that pertain to “Southern” urban practices, without meaning that these take shape in the same way in all localities. Most importantly, Southern cities manifest what is framed as “dynamic metabolism” (Schindler, 2017, p. 54) or, similarly, as an imperative to constantly keep moving forward in any possible way (Bhan, 2019). The prominent example of public utilities, to which Southern residents lack access, lead them to construct their own (infrastructure systems) through individual or collective constellations (Schindler, 2017). Furthermore, Southern urbanism is characterized by uncertainty, which can be illustrated through the example of housing in India, where the majority of Indian residents live in auto-constructed houses that “remain legally, materially or spatially insecure” (Bhan, 2019, p. 647).

2.3 The Sustainable Livelihoods approach

Allowing to better understand the practical realities of poor people, the concept of sustainable livelihoods has found wide appreciation in the development field (Farrington et al., 2002). The livelihood concept follows the rationale that poverty is not simply a matter of low income, but a multitude of dimensions influence people’s ability to take advantage of economic opportunities (Krantz, 2001). Besides income, poverty is manifested in a lack of access to basic public services, social exclusion, education, poor health (U.N., n.d.). The livelihood approach captures the diversity of underlying dimensions to poverty by taking a more holistic approach on poor people’s ability to make a living and by drawing attention to the different types of assets and resources that they rely upon (Krantz, 2001). A focal point of the Sustainable Livelihood (SL) concept are thus the resources (or capitals) required to construct a desired livelihood strategy. These are typically classified into five groups: the natural, physical, financial resources, as well as the more intangible social and human capital, such as relations, claims, skills and knowledge.

Access to these various types of capitals is a fundamental attribute of the livelihood approach, particularly because a combination of resources (or assets) allows one to make choices and determine the construction of “livelihood strategies”. The larger the options and choices that people have, the better

their ability to resist and recover from external shocks (DFID, 2000). Livelihood strategies most commonly refer to the individual and household level, however development agencies have used the concept to implement programs also at other levels, such as district or community levels (Krantz, 2001). Finally, livelihood strategies, formed with a range of assets, result in “livelihood outputs”, such as increased well-being, or income (DFID, 2000).

The SL framework by Farrington et al. (2002), adapted from the British Department for International Development (DFID), conceptualizes the above-mentioned elements and their interactions. This adaptation is deemed more appropriate for analysing the realities of an urban setting and therefore serves as a theoretical foundation for this study (Figure 1). Besides illustrating that the vulnerability context and capital bases affect the livelihood strategies, which result in livelihood outcomes, it is shown that the latter in turn determines the ability or lack of thereof to build up capitals. This framework notably also stresses policies, institutions and processes (PIPs) which underline their critical role in influencing people’s ability to pursue livelihood strategies and achieve consequent sustainable outcomes. Theoretically, this relationship goes in both directions, assuming that livelihoods may also influence policy-makers decisions (DFID, 2000). Similarly, Mensah (2012) and Scoones (1998) also underline the necessity of broadening the focus from households' own ability to taking into account the impact of institutional processes, political and legal structures on creating livelihood strategies.

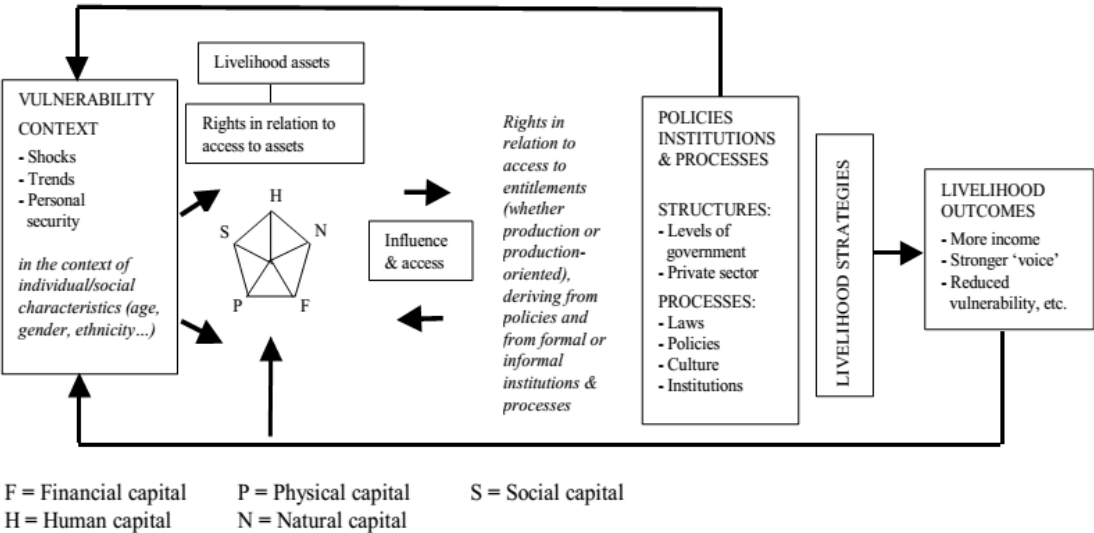


Figure 1: DFID SL framework (Farrington et al., 2002, p. 2). Adapted from Carney et al., (1999).

2.4 Urban exclusion

Urban exclusion links the broad and multidimensional concept of social exclusion to the urban context. Social exclusion is often referred to the deprivation of individuals, families or neighbourhoods from participating in social, economic and political spheres of life (Pierson, 2002). It entails a disadvantageous situation and can be understood in different dimensions. According to Gordon et al. (2000) social exclusion incorporates labour market exclusion, exclusion from earning a livelihood, from social services or from social relations. “These different dimensions of social exclusion are seen as mutually

reinforcing, as constituting a vicious circle that leads to a progressive deterioration in people's labour market situation" (Gallie and Paugam 2004, p. 35).

In an urban context, residents that do not have sufficient resources are excluded from participation in society. The social exclusion and marginalization of people in an urban setting is often linked to spatial segregation, meaning that people are forced to or decide to live in places characterized by "the accumulation of bad conditions: economic, infrastructural, ecological and social" (Nowosielski, 2012, p.375). It is important to note that urban marginalization is often perceived in relation with racial and ethnic minorities. In the Global South, it is predominantly in peri-urban areas that urban issues such as a lack of infrastructure and public services persist, leading to serious social and environmental consequences.

This study assumes that urban inequalities caused by exclusion are likely to grow if they are not directly addressed by city governments. In fact, the government's tactic of "avoidance", seeing poor urban areas as "ungovernable" (Yiftachel and Yacobi, 2003, p. 217–218) is considered highly problematic and a method that merely exacerbates existing marginalization. It is suggested that moving away from this paradigm requires a shift from the neoliberal model of planning to a deliberate intention of "protecting the needs of ordinary people rather than privileged minorities, the public rather than private interest, the future rather than the present" (Lovering, 2009, p. 4).

2.5 Synthesis conceptual research

The conceptual framework shown below is an adaptation from the Farrington et al. (2002) framework. The emphasis of this framework is placed on the institutional processes that mediate individuals' ability to undertake livelihood strategies that result in sustainable or unsustainable outcomes. This framework adds to Farrington's et al. (2002) by taking into account the concepts of Southern urbanism and urban exclusion. The combination of the SL framework and the "Southern urban" theories illustrates that this research does not neglect the impact of formal policies, institutions and processes on the livelihood of waste pickers, nor does it overlook the reality of their everyday practices. The research acknowledges that waste pickers are dependent on their ability to build capitals that determine the construction of "improved livelihood strategies".

It is important to note that urban exclusion can either be a consequence of livelihood outcomes, as well as a factor of influence, the relationship thus goes both ways. A further component added by the researcher includes the fragmentation of the policies, institutions & processes at the three levels of government to emphasize the embeddedness of the local governance in higher state-level processes. The concept of co-management at the local level as a key component of this research highlights the collaborative process of stakeholders, which share the resource management. As mentioned above, the research follows Carlsson & Berkers' (2005) approach to management as a task-oriented process, which is not in a fixed state. To sum up, this framework is aimed to serve as a basis for a macro-micro contextual analysis. The theories in combination are concerned with identifying how the city's waste is being governed and its implications for waste pickers.

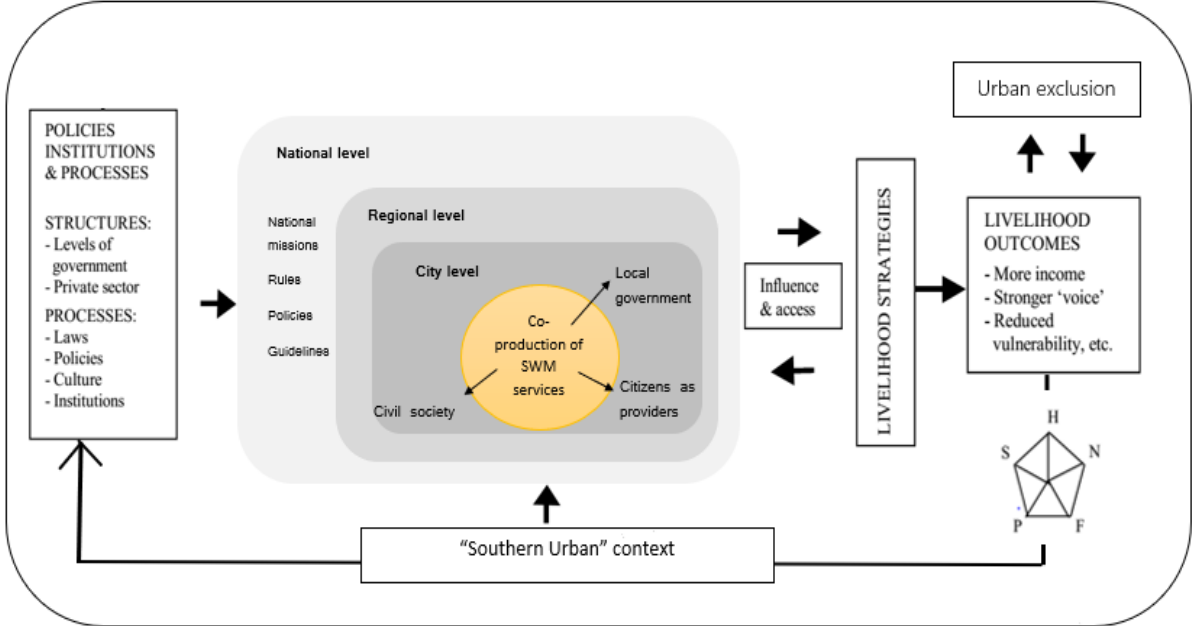


Figure 2: Conceptual Framework (Adapted from Farrington et al. (2002, p.2)⁴).

⁴ The letters in the figure refer to the following meanings: H = Human capital, S = Social capital, P = Physical capital, F = Financial capital, N = Natural capital.

3. Regional framework

This section sets the regional context of this study. The aim is to examine demographic, cultural and historical developments in order to generate a deeper understanding of the contemporary urban governance context for SWM. Bengaluru was chosen, firstly, as the management of waste is characterized by diverse institutional dynamics, involving a multitude of actors including the private sector, NGOs, small recycling units and a large informal sector (Van Beukering et al., 1999). Second, the city was ranked amongst the three cities with the highest amounts of waste generated per capita (Kumar et al., 2017). Lastly, issues related to a chaotic collection system and unsatisfactory disposal practices that were identified two decades ago by van Beukering et al., (1999) are still to be found in more recent studies (Naveen & Sivapullaiah, 2016). In order to take into account, the holistic dynamics of the city, the geographical scope was not confined to a specific area. The reason for this is that the city's waste was found not to be concentrated in specific areas, but to be spread out through the city. In fact, the majority is not deposited in the two official landfills outside Bengaluru, but rather along the streets and in 60 informal dumpsites in and around Bengaluru (Global Alliance of Waste Pickers, n.d). The reason for selecting the entire city, despite its size, is also to be consistent with the municipality's policy, which is analysed as part of the policy analysis.

3.1 Demographic, economic and spatial growth

Situated in the South-Eastern Indian state of Karnataka, Bengaluru⁵ is the industrial, commercial and administrative capital of the state. With a history of 400 years, the city developed from being a small village in the 12th century to the fifth largest metropolitan city in India (Sudhira et al., 2007; Gowda et al., 2013). After New Delhi, Bengaluru is the fastest-growing metropolis in India (World population review, 2021). Table 1 shows the city's trajectory of urbanization from 1991 to today. According to the 2011 census, the population of the Bengaluru Metropolitan Area (BMA)⁶ amounted to 8.52 million, which represents a 49.5% growth since the last census in 2001 (Census of India, 2001). The population has continued to grow considerably reaching 11.4 million in 2018 (United Nations, 2018). Today the city is the fastest growing metropole after New Delhi (World Population Review, 2021).

⁵ In 2014 the city's official name changed from Bangalore, which was the anglicized name, to Bengaluru (city's name in the local language, Kannada, in use before colonial times). The change of name is said to reflect "the sentiments of the local people" (The Economic Times, India Times 2014). Therefore, the name Bengaluru will be used throughout this study.

⁶ Bengaluru Metropolitan Area (BMA) refers to the largest zone comprising the "Erstwhile" City Corporation area and the Greater Bangalore Region (see Figure 3). This term is used in all planning documents in Karnataka. However, the demographic unit used by the Census of India (2011) is "urban agglomeration".

Table 1: Trajectory of urbanization in Bangalore 1991-2021. Adapted from Van Gils (2020).⁷

Indicators	1991	2001	2011	2021 ⁸
Total population (million)	4.13	5.69	8.52	12.76
Total area (km ²)	445.91	531.00	709	n.a.
Decadal growth of population (%)	41.36 ⁹	37.69	52.49	49.81
Density of population (per km ²)	7991	9263	10710	n.a.

Today Bengaluru is known as India's "Silicon Valley", as it houses a huge hub of IT industries, employing 30% of the country's IT workforce. With a growing high-tech industry together and other main economic sectors, such as aviation, space, textiles, biotechnology or defence, the city has become a centre of strategic scientific and technological progress. This has naturally attracted a large number of migrants from both within and outside India (Sudhira et al., 2007). Along with the rapid economic growth of the city, spurred by economic liberalization and investments in numerous industries as well as in real estate, the city has experienced remarkable spatial growth in the last two decades. Since the mid-20th century the city has spatially expanded 10 times, and the administrative divisions have also kept rising with the city's expansion. A major transformation at municipal level occurred with the establishment of the Bruhat Bengaluru Mahanagara Palike (previously named "Greater Bangalore City Corporation") in 2006, which constituted the consolidation of Bangalore City Corporation with 8 neighbouring Urban Local Bodies (ULBs) and 111 outlying villages, which are now part of the Bangalore Metropolitan Area, as represented in Figure 3 below (Sudhira et al., 2007).

⁷ Census data from 1991-2011 retrieved from Van Gils (2020), which was modified from Pellissery et al. (2016). Data sources for 2021 retrieved from Bangalore Population 2021. World population review (from UN World Urbanization Prospects). Retrieved from: <https://worldpopulationreview.com/world-cities/bangalore-population>

⁸ The available data for 2021 is based on estimates, as the next official census will be conducted in 2021.

⁹ The decadal growth of population refers to the growth occurred in the period of 10 years previous to the indicated year (1981-1991). It should be noted that the growth from the indicated decades is substantially less than that from 1971 to 1981 (76%) (Sudhira et al., 2007).

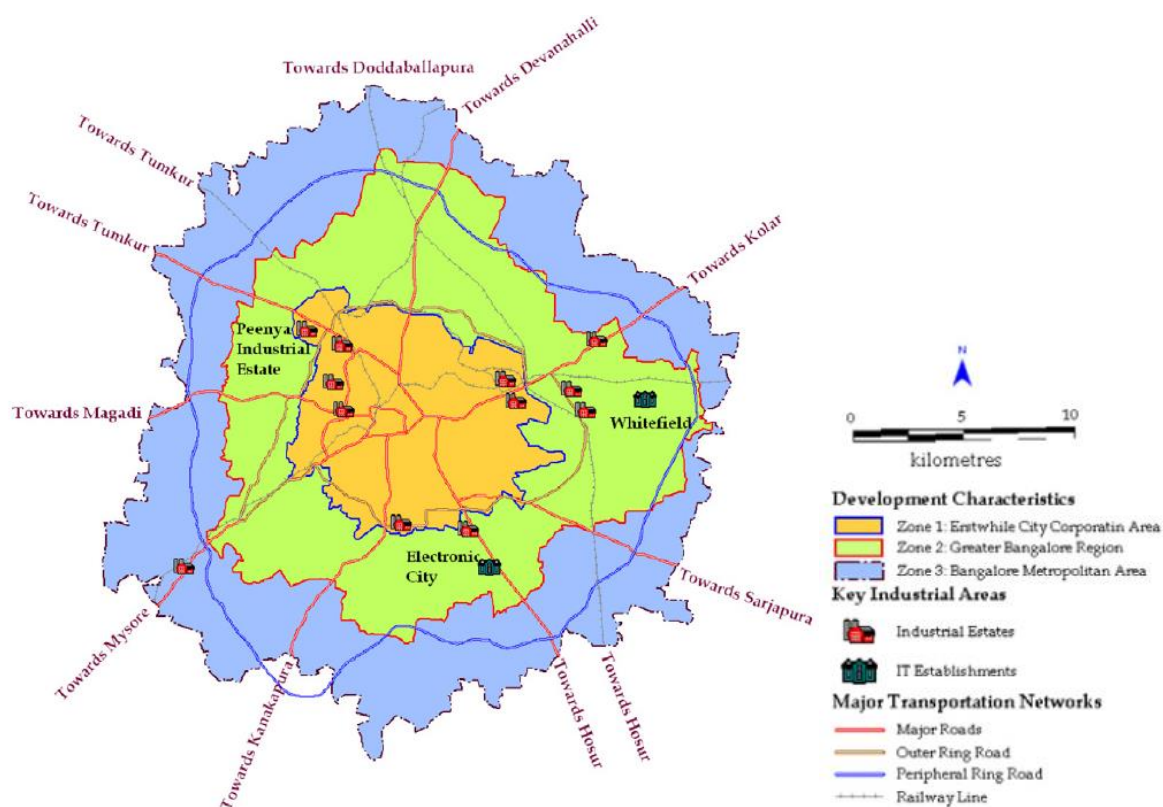


Figure 3: Spatial development of Bangalore (Sudhira et al., 2007, p. 380).¹⁰

3.2 The dark side of growth

Bengaluru counts as one of the fastest growing cities in the world, however, the rapid economic and physical growth of the city gave rise to many urban challenges (Kanehal, 2019). In terms of population, the city is characterized by high population density, and has surpassed its carrying capacity, leading to unsustainable living conditions (Manjunatha, 2020). Moreover, as a common phenomenon in developing countries, unplanned urbanization and urban sprawl increases traffic congestions, poses serious environmental challenges and leads to inadequate infrastructure and to the collapse of basic services and poor quality of life (Ramachandra & Aithal, 2019). Bengaluru is particularly marked by stark social divisions: While IT- firms benefit from world-class services, as day and night water, electricity and fast transportation modes, fully-equipped housing, the majority of the population has minimal access to the most basic services. This division is exacerbated by privately developed infrastructure projects and internationally financed capital flows, e.g. by the World Bank and Asian Development Bank (Goldmann, 2008). While the city is considered to be characterized by a higher per capita income than other parts of Karnataka, the increasing land and living prices have pushed many people to reside in slum settlements. Slum dwellers mainly consist of low-income people typically associated with a low social status of scheduled casts, tribes and minorities. Migrants account for a large portion of slum dwellers, who

¹⁰ Zone 1 (yellow): Erstwhile City Corporation Area, Zone 2: Greater Bangalore Region, Zone 3: Bangalore Metropolitan Area

are faced with the issue of a shortage of affordable housing. Presently slum dwellers are estimated to amount to one third of Bengaluru's total population (Gowda et al., 2013). Compared to the unaffordable city developments, slums provide basic shelter often closer to poor people's work, despite lacking basic amenities.

3.3 India's caste system

The discussion about castes in the 21st century is split among various schools of thought. On one side, a number of sociologists have observed the disappearance of the link between castes and occupation due to westernisation and urbanisation. Castes are said to have faced the problem of maintaining their identity due to urbanisation coupled with the dispersal of population across various states (Shah, 2007). On the other side, Ambedkar (2014) pinpoints to the persisting problem of neglect, claiming that people are ignorant of the magnitude of the problem, not caring about the lowest castes.

Castes are known to have been present for centuries in the Indian social system. The majority of India's Hindu's population is divided on the basis of "castes" or "jati" (Eng. born), which refer to a regulated social group to which one is born into. Historically, a principal characteristic of castes has been their hierarchical and hereditary nature (Thorat and Joshi, 2020). The hierarchical nature of castes has traditionally been associated with specific occupations. The division of society into four large caste clusters (Varnas) was based on the theory of "Chaturvarnya", part of the divine rules. At the top of the hierarchy are priests (Brahmins). Next in the rank of the varnas are warriors (Kshatriyas), followed by peasants or merchants (Vaishyas). The lowest class is constituted of labourers and artisans (Shudras). A fifth group was/is foreseen for people that carry out occupations that were considered polluting. Occupations that involved ritually and physically impure activities included working with dead animals or coming into contact with human body emissions (Thorat and Joshi, 2020). For people of higher castes, any interaction with people from this group, such as withdrawing water from the same well was believed to transmit impurity. Therefore, people constituting this group were formerly called "untouchables" and have been excluded from the system, deprived of social rights. Later, the term "Dalit" (Eng. Oppressed) came into use by themselves and by politically active members. Today their official designation is "scheduled caste" (Britannica, n.d.). The question, the researcher argues, is whether a designation per se does not create disparities and related inequalities. Although, the use of the term "untouchables" and the social restrictions associated to it have been declared illegal in India's constitution, whether their exclusion is still practiced in reality is disputed. Thorat and Joshi (2020) argue that up until today the mindsets of impurity among upper castes towards people of lower castes are still prevalent.

According to Ambedkar (2014) this system, more than being a division, it officially classifies people according to their birth, thereby determining everything associated to their life. The fixed and permanent characteristics of castes does not leave them the ability to cross these class divisions. Ambedkar (2014) underlines the importance of critically examining this class-composed society, which he claims has not been questioned sufficiently. Classes exist in all societies; however, the author argues that the problem emerges with the acceptance that India's class composition is widely viewed as ideal and

sacred. This study evaluates in which ways the caste system is reported to create social vulnerability and exclusion to waste workers.

3.4 Structure of Solid Waste Management in Bengaluru

Once branded as “Garden city” owing to its extensive parks and greenery, the decade-old tag “Garbage city” is a visible result of unprecedented growth, following the expansion of Tech industries (Harris, 2012). The municipality faces frequent accusations of being unable to handle the growing amounts of waste (Kaneal, 2019). In India Urban Local Bodies (ULBs) are the implementation entity responsible for waste collection, processing, transporting and disposal services as well as for setting up appropriate facilities, for instance separate categories of bins. The Bruhat Bengaluru Mahanagara Palike (BBMP) is the local authority responsible for the collection and disposal of waste. The two departments directly involved with SWM within the BBMP are the Health Department and the Engineering Department. While the former is tasked with collection and disposal activities, the latter provides infrastructural and technical assistance (Naveen & Sivapullaiah, 2016). The recent division of Bengaluru in 198 administrative wards is argued to enable power to be delegated to smaller units (Naveen & Sivapullaiah, 2016). Bhan & Jana (2015) point to the potential ease of monitoring schemes and structural inequality on a ward-scale, which could bring about a new political discourse. However, the authors also express their concern of a weak urban governance of such smaller units.

Following rising population growth and spatial expansion of the metropolitan city, this study looks at local governance structures embedded in wider national and state-level waste-related policies and processes to identify how these shape the livelihoods dependent on waste, as framed in the conceptual framework in section 2.5.

4. Methodology

4.1 Research Methods

To answer the research questions, a selection of qualitative research methods were used. According to Hennink et al. (2010, p. 16), the objective of qualitative research is “to gain a contextualized understanding of behaviours, beliefs and motivations”. This study attempts to adopt the authors’ approach of “Verstehen”, meaning studying the research issue from people’s own perspective in their own context. Methods of this nature are considered most appropriate for this study because they allow the researcher to understand meanings and analyse interpretations of policy makers linking them to those of other actors participating in the governance of Solid Waste Management systems. The following section describe the mix of qualitative research methods used.

4.1.1 Policy analysis framework

The policy analysis used in this study follows the four-dimensional framework by Walt & Gilson (1994). It was developed for health sector policies, however its application is not restricted to this sector (Buse et al., 2012). The simple model below, as shown in figure 4, helps to critically analyse not only the *content* of policies, but also the *actors* involved in the design and implementation of policies, the *context* and the *processes* of policy-making. Policy *content* includes the vision, objectives, principles or ambitions and *how* these shall be implemented. Furthermore, the policy analysis should highlight the *context* referring to situational, structural or cultural factors that influence policy. *Actors* refer to key individuals, groups or organizations that both develop the policy and are affected by it. Finally, “processes refers to the way in which policies are initiated, developed or formulated, negotiated, communicated, implemented and evaluated” (Buse et al., 2012, p.13).

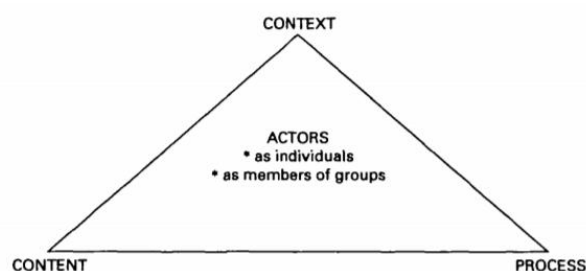


Figure 4: A model for health policy analysis (Walt & Gibson, 1994, p. 354)

Furthermore, the policy analysis is based on interpretive research, which recognises that there is not one single, exact meaning in policy-relevant documents or events, that can easily be found by the researcher. Instead, it is informed by hermeneutic school of thought, which emphasizes the differences in meanings and interpretations of various parties (Yanow, 2007). Bearing this in mind, the aim of this

policy analysis is to discern meanings in order to understand why policies related to SWM and waste pickers are formulated in a certain way.

4.1.2 Media analysis

Newspaper articles and reports provide a contemporary source of information. In this way, the researcher gains the views of the policy “recipients” as well as a more general contemporaneous sentiment. This method is used complementary to the policy analysis, being aware of the importance of incorporating the experiences of those to whom policies are addressed to (Yanow, 2007). The specific objective of the media analysis is to grasp what topics related to the livelihoods of the waste workers have received coverage. This helps to understand how the media frames issues of waste governance linked to waste pickers, what subjects are in focus and how these being represented. Through this, it is hoped to provide answers to sub-question (2) and enhance the understanding on ways in which the current SWM system exacerbates the livelihoods of waste pickers. Major factors may include working conditions, social security rights, income. Furthermore, the neutral position of the media is likely to inform on the barriers and opportunities for enhancing urban livelihoods, thus answering sub-question (4), see section 1.5.1.

4.1.3 Semi-structured interviews

The interviews generate information on perceptions, motivations and experiences of these actors that directly deal with socio-urban issues linked to waste pickers in the waste management sector. Therefore, this method particularly aims at answering sub-question (3) about the emerging forms of governance that ensure inclusive and sustainable livelihoods. Moreover, views on barriers and opportunities for enhancing livelihoods are investigated from the perspective of active people that work in the field, providing answers to sub-question (4), see section 1.5.1. The semi-structured form with open end questions, allows the researcher to follow the prepared guide, while leaving room for the interviewee to add or complement with new input, which was not explicitly asked by the researcher.

4.2 Operationalization of concepts

Table 3 illustrates the operationalization of the key concepts used in this research. Indicators for sustainable livelihoods vary across literature and development framework. The list below is based on the categories introduced by the DFID (2000). It should be noted that the applicability of these indicators is highly situation specific. Not all may be relevant and more importantly, the list may not be exhaustive. Moreover, this research shares Chambers’ (1997) argument that livelihood analysis should acknowledge that criteria for well-being are highly personal and far from uniform. The livelihood capitals are measured on basis of Farrington et al.’s (2002) categorization and understanding. The indicators for urban exclusion do not reveal the causes for it but allow an estimate of the degree of exclusion (Pierson, 2002).

Table 2: Operationalization of concepts.

Concepts	Indicators	Source	Operationalization
Urban governance as co-management	<ul style="list-style-type: none"> • Arrangements of shared responsibilities, rights and duties between the primary stakeholders, in particular, local organisations, waste pickers and the local government • Type of relations: Intermittent and spontaneous or regulated by law 	Soeftestad (1999); Carlsson & Bekers (2005)	The policy analysis, media analysis and interviews help to examine how powers, rights and duties are shared between the state and other actors
Livelihood capitals	<ul style="list-style-type: none"> • Natural capital - environmental assets e.g., land, common property resources or open access resources as water, forests • Physical capital - housing, tool equipment, tools or public infrastructure • Social capital - networks, social relations, affiliations • Financial capital - cash, savings or other economic assets • Human capital - knowledge, skills, ability to work 	Farrington et al. (2002)	The media analysis and interviews help to explore how different relations and institutional arrangements in SWM impact people's access to livelihood capitals.
Sustainable livelihood outcomes	<ul style="list-style-type: none"> • Increased well-being and capabilities • More income • Reduced vulnerability • Improved food security • More sustainable use of natural resources 	DFID (2000)	The media analysis and interviews help to explore how different relations and institutional arrangements in SWM impact livelihood outcomes.
Urban exclusion	<ul style="list-style-type: none"> • Exclusion from the labour market • Exclusion from social services and welfare • Exclusion from earning a livelihood • Exclusion from social relations 	Gordon et al. (2000)	The media analysis and the interviews help to identify how waste pickers are exposed to which forms of exclusion

4.3 Data collection and data analysis

Due to the current covid-19 pandemic data was collected fully online. The study area and its context are thus mainly explored through online material and expert interviews. All qualitative data sources (policy documents, media articles and interview transcripts) are coded and analysed with the MAXQDA, a qualitative data analysis tool. The data was coded using codes informed from the concepts

(see table 2 section 4.2), as well as (and primarily) through an inductive approach, to ensure the explorative character of this research (see Appendix D for code list). Developing codes as the data is analysed allowed the researcher to analyse various issues raised from the data (Hennink et al., 2010).

4.3.1 Policy analysis

In the first phase of the data collection, desk research is done to review relevant policies and current developments. The policy analysis aims at reviewing the national policy framework of waste management between 2010 and 2020, recognising that the main waste-related policies valid today, have emerged during this time frame. This decade is particularly interesting to look at, since it includes 5 years before the declaration of the Swachh Bharat (Eng. Clean India) mission as well as the period after the new national mission. Policies and government documents are selected according to their content and the relevance of the actor. They are examined with a primary focus on the coverage and understanding of “waste pickers” and “inclusion” of waste pickers. The actors taken into consideration for the analysis include relevant Ministries for SWM¹¹, the Karnataka State and the Municipality (BBMP) (See Table 2). Most documents are retrieved from the open publication library of the respective Ministries and official portals.

The most evident document in review is the Manual on municipal SWM, which is addressed at senior managers, health officers or other staff at municipality level and provides detailed guidance on planning and implementation processes. The document is in line with the Governments’ “Swachh Bharat Mission” launched in 2014 which aims to achieve countrywide cleanliness. The report “Empowering marginalized groups” released by the MoHUA attempts to link the SBM with the Deendayal Antyodaya Yojana, the National Urban livelihoods Mission (DAY – NULM) and is expected to provide an understanding of suggested livelihood improvement opportunities detailed out by the Ministry. The Solid Waste Management Rules have been renewed in 2016 and they entail the main duties to waste generators and authorities. Next to the SWM policy, rules on specific waste streams have been developed along the past decades. This study looks particularly at the plastic waste management in particular, as recycling activities are frequently carried out by informal waste pickers. At state level, the Government of Karnataka’s policy on integrated SWM as well as the draft for the state’s SWM bye laws are examined. This part of the policy analysis aims to provide an answer to sub-question (1), see section 1.5.1.

¹¹ These include mainly the Ministry of Housing and Urban Affairs and the Ministry of Urban Development (MoUD) and the Ministry of Environment Forest and Climate Change (MoEF & CC) (Priti & Mandal, 2019).

Table 3: Overview of the sources and actors considered in policy analysis.

Type of actor	Specific actors	Sources	Date
National level (Government of India)	Ministry of Urban Development (MoUD)	Manual on municipal SWM - Swachh Bharat Mission	2016
	Ministry of Environment Forest and Climate Change (MoEF & CC)	Plastic Waste Management Rules	2016
	Ministry of Housing and Urban Affairs (MoHUA)	Empowering Marginalized groups	2018
	Ministry of Environment Forest and Climate Change (MoEF & CC)	Solid Waste Management Rules	2016
State level	Karnataka State	Karnataka State Policy on Integrated Solid Waste Management	2014
	Karnataka State	Draft Karnataka Municipal Corporation Model SWM Bye-Laws	2018
Local level	Bruhat Bengaluru Mahanagara (BBMP)	Solid Waste Management Bye-laws	2020

4.3.2 Media analysis

Analyzing media articles generates information on the multiple stakeholder perspectives as portrayed in the media in the last decade (2010-2020). To be consistent throughout the methods, this time span is equivalent to the one chosen for the policy analysis. The key words used are presented in figure 5. Any preconceived categories have been left out to ensure that the results give an idea of what themes are important and are not influenced by the researcher's ideas gained from the literature and the policy analysis. The search was conducted with Nexis (successor of Nexis Lexis Academic), the University library for international news sources.

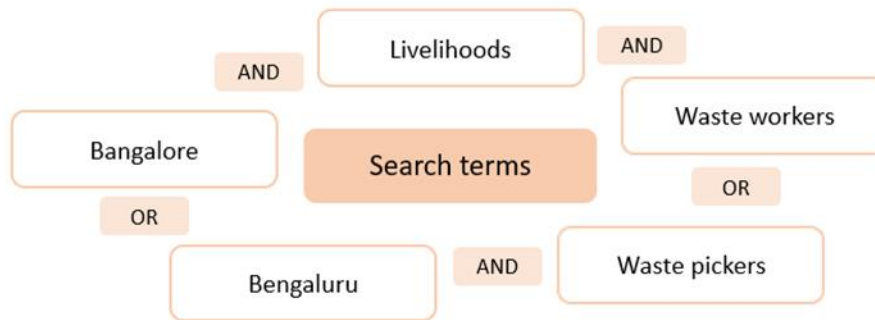


Figure 5: Representation of key words used in media analysis.

The news items were retrieved exclusively from national and local newspapers such as Times of India, Deccan Herald, Bangalore Mirror and Daily News and Analysis. Independent newspapers with a specific focus such as “Feminisminindia” have also been incorporated to collect a range of different perspectives. International news items about India have been excluded, in order to filter out any content which has not been drafted by locals. News articles where waste pickers represent the main subjects are primarily included. However, the analysis also incorporates articles that deal with a specific waste governance issue and mentions waste pickers. News items where waste workers are peripheral, and the central subject is not waste are excluded.

4.3.3 Semi-structured interviews

Semi-structured interviews were held with five representatives of civil society organisations and private initiatives (See Appendix B). After the policy and the media analysis, relevant local organizations were identified, and first contacts established. Snowball sampling resulted in further respondents. Interviews were conducted via Google Hangouts and other videoconference platforms available to interview participants. The interviewee was asked for consent for the recording and transcribing of the interviews. The interviews are used to complement the media analysis, to better understand the role of emerging non-governmental initiatives and their impact on the livelihoods of waste pickers. The interview guide is thus produced taking into considerations the findings from both the policy and the media analysis (See Appendix C for the interview guide). To strengthen the validity of the findings, the interview results were compared to the media analysis and policy analysis results.

The codes used for the interviews

4.4 Limitations and ethics

When conducting the interpretive policy analysis, a few limitations are noted. First, the “positionality” of the researcher itself, understood as her own meanings shaped by its personal background, shape the study of meanings in policy documents. Second, a situational analysis is often used in interpretive policy analysis, as it allows to reduce the distance between the researcher and the studied subjects.

Physical presence to policy-debates, or conversations with the research subjects enables to understand the settings and thus underlying policy decisions. Due to the covid-19 pandemic the physical presence of the researcher is constrained, which denies the opportunity to conduct fieldwork in the study area. It is believed that this would have provided a deeper understanding of the study area as well as a more direct and real capture of the realities of waste workers.

Furthermore, it has to be noted that data from interviews as well as the media might generate biased information. For the media analysis, the reporters' positionality and subjective perceptions are likely to influence the content and framing of the articles. To overcome this issue, different news sources have been included to maximize the variety of positions taken regarding the topic of waste management and waste workers. Concerning the interview respondents, bias linked to their function in the organisation cannot be excluded. The researcher was aware of their potential interest in promoting and glorifying the outcomes of their activities. Triangulation between the three methods ensured the verification of the data where possible.

Conducting research in the development context brings certain ethical considerations (regardless of the online setting). The researcher was aware that the study of precarious livelihoods in the informal sector is a sensitive topic that requires making the research participants, directly working with waste pickers, feel in a non-judgemental and respectful space. Attention was paid to not transmit respondents the feeling that their verbal expression is perceived as being subject to judgement from the researcher. Furthermore, a safe space is ensured by clarifying the role of the researcher and by assuring in written form that the data provided by research participants is used solely for research purposes. Lastly, permission was sought, before revealing any identities.

4.5 Data reporting

The data is structured in the following chapters: The first chapter outlines actors involved in the design or implementation of waste-related policies (As can be seen in figure 4, actors are a part of the policy framework). The second chapter lays out the policies, manuals and rules at the three levels, as presented in table 3, section 4.3.1. The third chapter describes the findings from media analysis. In addition to the analysis, the data is presented in tables, figures and case studies. More specifically, the data from the interviews translates into four individual case studies, presented in boxes, that are used complementary to the media analysis, to illustrate how civil initiatives play a role in shaping the livelihoods of waste pickers.

Finally, an appendix is included with the following information: Extra sources, List of interviewees, Interview guide, Code list, Excerpts of facilitation table for media analysis.

5. Results I: Mapping the Stakeholders

In order to understand the system in which waste pickers work, it is firstly important to identify the major stakeholders involved in both policy-making and in the operations of the solid waste management sector. Given that the aim of the thesis is to analyse how waste pickers are linked to the broader waste management system, the main stakeholders are considered at all levels of the three-tier system of government (central, state and municipal). First, this part seeks to identify the principal public, private, civil and individual actors playing a role in solid waste management. Second, their responsibilities, tasks or interests are mapped out. Figure 6 shows the main stakeholders involved in the solid waste management sector represented on three subordinate levels. In hierarchical terms, the lines between a “higher-tier” and a “lower-tier” actor indicate a subordinate relation, meaning that lower tiers report to higher ones. The dotted lines at municipal level are used to show a contractual or member-based agreement between the parties. It has to be noted that, as described in section 5.6, informal waste pickers are part of a long value chain in the informal sector. The role of the other actors part of this value chain are outlined below in section 5.6, however they are not incorporated in this figure as the focus is on waste pickers.

Governmental stakeholders include relevant ministries and governmental departments that have legislative or executive duties. Besides public institutions involved in the policy and execution process, this section highlights to which degree the private sector is involved in SWM activities. Importantly, this section also deals with those affected by policies. Although citizens, commercial and other establishments are targeted by policy makers and certainly represent significant stakeholders in the waste sector, they are not mapped out, as the focus of this thesis is on Bengaluru’s waste pickers and their linkage to the broader system. Thus, the characteristics and different categories of waste pickers are portrayed in detail in the last part of this section.

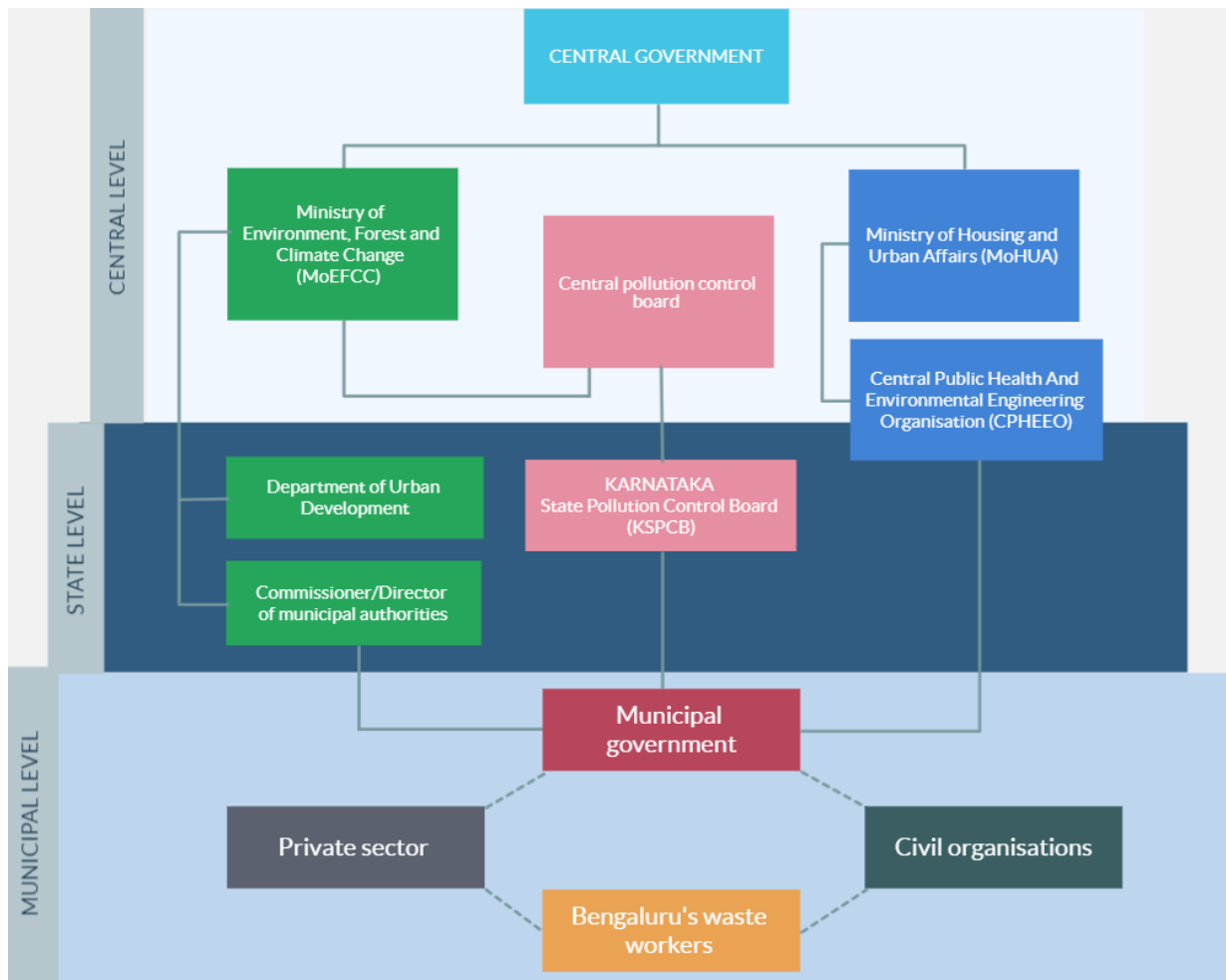


Figure 6: Main stakeholders involved in the SWM sector represented on the three levels (Author's own).

5.1 Central government¹²

The central government is essentially responsible for drafting rules, laws, policies and manuals for solid waste management. The role and duties of the major ministries involved in SWM are stipulated in the Solid Waste Management rules, 2016 (see section 6.1.1.1). As can be seen in figure 6, two ministries in India's government are mainly responsible for the administrative, financial and technical management of waste: The Ministry of Housing and Urban Affairs (MoHUA), formerly Ministry of Urban Development, and the Ministry of Environment, Forest and Climate Change (MoEFCC). The former's duty comprises the coordination and periodical review of the measures set by States and local bodies. The Ministry is responsible for a large spectrum of areas that relate to urban development. These areas include water supply, sanitation and solid waste management. More specifically these areas are attributed to a Ministry's affiliate, the Central Public Health and Environmental Engineering Organisation (CPHEEO), which is said to be its "technical wing" (CPHEEO, 2020). The CPHEEO is assigned to support the Ministry with the formulation of policies. It is also viewed as an advisory board to States and local

¹² Throughout the thesis "central" will refer to the government and "national" to policies, rules and manuals published at this level

bodies, providing them with technical, operational and financial assistance. The emphasis on technical aspects is illustrated by the organisation's task to advise on the latest technologies as well as the organisation's employees. The staff is composed entirely of engineer specialists (CPHEEO, 2020).

The second principal ministry involved in SWM is the Ministry of Environment, Forest and Climate Change (MoEFCC). Primarily this ministry oversees the country's policies and activities relating to the conservation of natural resources and the protection of the environment. One component of its responsibilities is the prevention and control of pollution, under which waste is incorporated (MoEFCC, 2021). More specifically related to waste, the ministry is responsible for monitoring the implementation of the waste management rules across the country (Priti and Mandal, 2019). The SWM rules also dictate the formation of a Central Monitoring Committee uniting experts from various relevant ministries, including the two principal mentioned above. The remaining ministries part of the Committee are to provide market and technical assistance and assist in the waste-related fields of power, renewable energy, agriculture and fertilizers. For instance, the Ministry for Agriculture tests the cities' composts and advises on this matter. The Central Pollution Control Board is to prescribe environmental standards for waste processing and treatment facilities and monitor the implementation of these rules (MoEFCC, 2016).

5.2 State government

The responsibilities of the States reflect their intermediate position, hence ensuring the local bodies' implementation of the set of rules formulated by the central government. The duties as per MoEFCC (2016) (see section 6.1.1.1) are designated to the Department of Urban Development through the Commissioner or Director of Municipal Authorities. A state policy in line with the national SWM and urban sanitation policy is to be formulated in consultation with stakeholders working with waste. The rules state that representatives of waste pickers and self-help groups should be included in the consultations. Furthermore, the state policy should be in line with national policy in terms of prioritising waste minimisation and recognising the fundamental role of the informal sector. "Broad guidelines" regarding the integration of waste pickers should be formulated and a scheme for their registration started. The duties of the Urban Development Department further entail designating separate spaces for the segregation, storage, recovery and decentralised facilities of solid waste. This applies to commercial, group housing, institutional and industrial zones.

The overseeing organism at state level in Karnataka is the Karnataka State Pollution Control Board (KSPCB), an individual committee which acts as counterpart of the Central Pollution Control Board (CPCB). With regards to waste this committee is responsible for enforcing the SWM rules, for issuing operational authorisations and for ensuring the compliance of prescribed environmental standards (MoEFCC, 2016). However, it needs to be stated that, as the name indicates, the KSPCB is more generally tasked to ensure the implementation of all pollution-related legislation (prevention and control).

5.3 Municipal government¹³

As formulated per SWM Rules, the local municipality is responsible for the implementation of the rules. It is entrusted with the transportation, collection, storage, disposal of waste as well as with the establishment and operation of facilities. One main point is, for instance, the collection system that shall be organised as a door-to-door system of segregated waste from all types of buildings and housing, including informal settlements. A number of studies highlight that in practice most of Indian municipalities focus heavily on collection activities when compared with treatment and disposal. A CPCB study from 2013 found that of the total municipal waste generated across India, 70% was collected and less than 15% treated or processed (CPCB, 2013). The allocation of funds reflects the prioritisation of collection, with 60-70% spent on collection, 20% on transportation and only less than 5% on disposal, which leads to a high degree of dumping in most Indian cities (CPHEEO, 2013). Financial allocation and the lack of financial resources is frequently found to be one of the main barriers for an effective SWM system (Sharholi; Mani & Singh, 2016). Firstly, more broadly, it has to be noted that local governments in Karnataka are highly dependent on the permission of state agencies for infrastructure projects (Mengers, 1999). Secondly, SWM is one of many areas the BBMP needs financial resources for (besides other public services such as water or sanitation). And typically, of the total budget allocated to the BBMP, only 5-25% goes to SWM, which reflects the fierce competition between departments (Biyani & Anantharaman, 2017). Underfunded municipalities are said to be a common issue in developing countries, which is why private participation is seen as an opportunity for expanding the resources of municipalities and increase public service delivery's efficiency (Cointreau-Levine, 1994). Regarding Bengaluru's private participation, the BBMP manages 30% of the total municipal waste and the remaining waste management activities including collection to disposal are outsourced to contractors (Naveen & Sivapullaiah, 2016).

5.4 Private sector

The municipality can decide to contract the private sector for parts or full waste management activities. Several urban local bodies in India were found to mainly award contracts to the private sector for door-to-door collection, street sweeping and transportation of waste (Madhav, 2010). The involvement of private sector actors in SWM activities is presented as a viable option for facilitating the establishment and operation of processing facilities in the SWM rules. The guiding CPHEEO manual also actively encourages the participation of the private sector presenting this stakeholder as being able to finance municipal services while improving service delivery. Besides financial resources the private sector "has become essential" for providing trained staff, low-cost operation and the required flexibility (CPHEEO, 2016, p.124). However, it needs to be taken into consideration that the primary aim of the private sector when delivering a public good, remains making profit, while at the same time the government's objective is to save money (Cointreau-Levine, 1994). An example for this is the compensation arrangements of waste transportation, which some scholars have found not to be in line with

¹³ Municipal and local government are used inter-changeably in this thesis.

the visions expressed in national legislation. Trucks are compensated per trip and are thus incentivized to transport large quantities of waste outside of the city (Madhav, 2010; Cointreau-Levine, 1994). As mentioned before, Bengaluru's municipality heavily focuses on collection and transportation services. This mode of compensation is one factor that again reinforces the city's priority on keeping the city clean, however placing less efforts on keeping the environment healthy (Kumar et al., 2017). This practice also explains why the amounts of dumped waste on landfills exceed the limited capacity, such as in the case of the privately operated Mavallipura landfill. The latter accepts three times the allowed amount of tons of waste per day, thereby increasing the risk of chemicals leaching into the environment (Biyani & Anantharaman, 2017). Cointreau-Levine (1994) underline the issue of the private sector being more concerned with profit than respecting environmental standards.

5.5 Civil organisations and advocacy groups

Many citizen initiatives have emerged in the past decades, with a number of NGOs and community-based-organisations (CBOs) that play a role in working towards a healthier environment or address social justice issues. One initiative, called "Daily Dump" aims at changing people's perception of waste by teaching, encouraging and helping individuals to start home composting and reduce their waste. In addition, the organisation provides highly engaging information around waste segregation, recycling and individual choices and holds workshops in schools and communities (Daily Dump, n.d.). Besides raising awareness about better waste management practices on the individual level, some groups focus on advocating for the rights of waste pickers. Hasiru Dala which translates to "Green Force" (see box 1 in section 7.3.1) is a pioneering organisation that has played a crucial role in improving the livelihoods of waste pickers. It advocates their integration into the municipality, which is supposed to reduce their vulnerability and improve working conditions (Kanekal, 2019). Their efforts together with the Alliance of Indian Wastepickers (AIW) have resulted in the registration of 7500 waste pickers, leading to more regularity of their income as well as waste collection in parts of the city. Furthermore, Bengaluru's Solid Waste Management Roundtable (SWMRT) manifests SWM practitioners' commitment to mandate segregation at source, and importantly a more decentralised approach to waste management by setting up ward-level or neighbourhood non-organic and organic processing facilities with the aim of minimizing landfill and dumping (Danielson et al., 2020; SWMRT, n.d.). The network has also enhanced the support of the middle class towards neighbourhood recycling and composting by connecting these actors to informal waste pickers (Anantharaman, 2015; cited in Biyani & Anantharaman, 2017). According to a recent report by three research groups of pioneering waste organisations, the campaigning efforts of Hasiru Dala and the SWMRT and negotiations with the BBMP led to changes in the governments' waste management as well as considerations of waste pickers' rights in policy (Danielson et al., 2020).

5.6 Bengaluru's waste workers

In this thesis waste workers refer to all individuals that are involved with the primary stages of waste management, mainly the picking/collection or transportation of waste. In Bengaluru they can generally

be divided in formal, municipal contract workers, locally called “pourakarmikas”, and informal sector workers. The division between the two groups is reflected in academic work as well as in all policy documents and is purely based on whether waste workers are formally employed or not. According to Madhav (2010) there are only few exceptions where informal waste pickers are bought in by contractors. Thus, waste pickers commonly refer to the informal waste workers and collectors understood as a group of female, male or children workers without employer-employee relationship. Mahav (2010) categorises them as self-employed, as they live from transactions with middlemen (or scrap dealers) to whom they sell the retrieved materials that had been disposed. These people are thus first and foremost involved in recycling activities. They perform unregulated activities either as individuals, family or small enterprise with the primary goal of generating revenue.

Nevertheless, it is important to note that the formal/informal distinction is rather simplistic and fails to take into consideration the variety of groups among waste pickers, as you can see in figure 7. This variety is, for instance, presented by a study on about 250 informal waste pickers in Bengaluru, which makes two important distinctions beyond the formal/informal one. First, it divides waste pickers between those who mainly hand pick waste found in dumps, landfills, which represent a minority in Bengaluru and those who navigate the streets (CHF International/Mythri Sarva Seva Samithi, 2010). Among those who collect waste from the streets, a distinction shall be made between “free-roaming” ones and those who are employed by a micro-entrepreneur. The term “free-roaming” is commonly used by NGOs to designate daily wage earners, that pick recyclables from the street or from bins, sort and trade waste for living (Hasiru Dala, n.d.).

Second, the study importantly differentiates between migrant and local waste pickers. This distinction is based on the number of years that they have been living in the city. In the study a waste picker living in the city for more than 10 years is defined as local. The majority of the survey participants were found to be migrants from neighbouring and non-neighbouring states as well as from within the state of Karnataka (CHF International/Mythri Sarva Seva Samithi, 2010). Although in general terms the gender distribution reveals that the city of Bengaluru has more female waste pickers (56%), males outnumber females among migrant independent waste pickers (CHF International/Mythri Sarva Seva Samithi, 2010; Alliance of Indian Waste pickers, 2019).

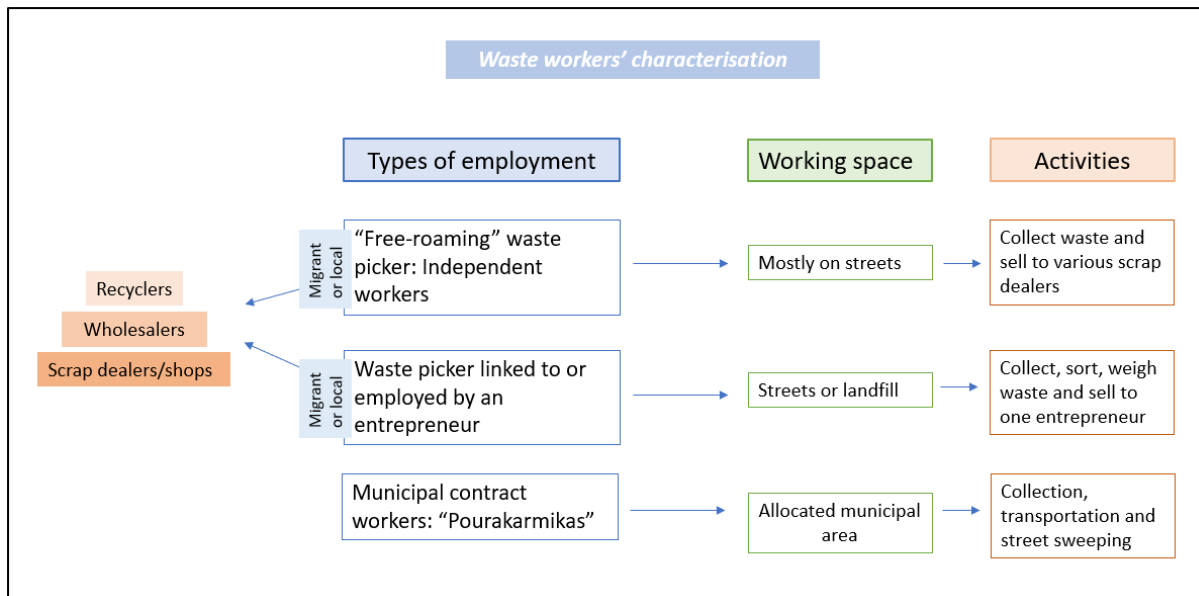


Figure 7: Types of employment, working space and activities of waste workers (Author's own).

According to Chandran et al. (2019), they are driven into the waste sector by poverty reasons and the lack of alternative employment opportunities which are safer, securer and with better payment. Furthermore, numerous studies in India have found that waste pickers belong to the lowest casts of the Dalit, which are amongst the most vulnerable people in the country. (Kanekal, 2019). Historically, informal waste workers have been marginalised from society merely because of their caste (Chandran et al., 2019). The essence of their work has been viewed as "unhygienic", which leads them to be mal perceived by the public and prone to social discrimination (Schübeler, 1996, p. 23).

In Bengaluru it is estimated that 25.000 informal waste pickers scout for and sort recyclable materials from garbage piles on the streets or collect them directly from households (Kanedal, 2019). It is important to note that waste pickers are positioned at the bottom of a long informal value chain in the waste sector. The outcome of this chain is recycled material. Hence, it can be stated that the informal sector manages waste in a way that is fully in line with the vision of the national legislation, which promotes recycling as the second most preferred action for a sustainable waste management approach (CPHEEO, 2016). After collection, informal waste pickers sell the valuable waste to scrap dealers or "kabadiwalas" who aggregate the materials (paper, glass, plastic) in bulk. These middlemen then sell the aggregate further up the value chain to recyclers located in the outskirts of Bengaluru or to the recycling industry (Biyani & Anantharaman, 2017).

The contract waste workers employed by the BBMP, the pourakarmikas, which can be translated to garbage cleaners, perform waste collection, transportation and street sweeping in allocated areas. According to the BBMP (n.d.) 4.300 pourakarmikas are employed by the BBMP, while 10.000 work for private contractors. Biyani & Anantharaman (2017) point out that collection services have been heavily privatised in the past decades. Of the city wards 91 percent are covered by the private activities, while only a small percentage of wards is left to the responsibility of the BBMP. Pourakarmikas are entrusted

with the primary collection from households to a common collection point from where waste is collected and transported to landfill sites (Naveen & Sivapullaiah, 2020). As for informal waste pickers, the majority of them belong to India's lower castes, often to the Dalit communities.

6. Results II: Analysing India's multi-level SWM policy framework

As mentioned in the methods section, Madhav's (2010) critically and holistically analyses the legal framework on solid waste management, within which waste pickers work. The author finds an utter lack of mandating the protection of livelihoods in this sector. He also points to the need for observing policy and legal transformations in the future. Hence, this section aims to expand on Madhav's (2010) earlier research and evaluate waste-related policies that have been drafted in the past decade.

This section thus firstly identifies existing regulatory governmental publications related to solid waste management from a multi-level perspective (see section 1.5.1, sub-question (1)). The reasoning behind the chosen time frame of this analysis is explained in the methods section 4.3.1. Figure 8 illustrates the timeline of the identified publications, which include the following forms: rules, policies and guidelines. In a further step, this part aims to critically evaluate the regulatory framework linked to waste, in view of specifically enhancing the understanding on how this affects workers in the waste industry. The relevance of the policies, guidelines and bye-laws for waste pickers is discussed. This is followed by an identification of recurrent and convergent themes that impact the livelihoods of waste pickers.

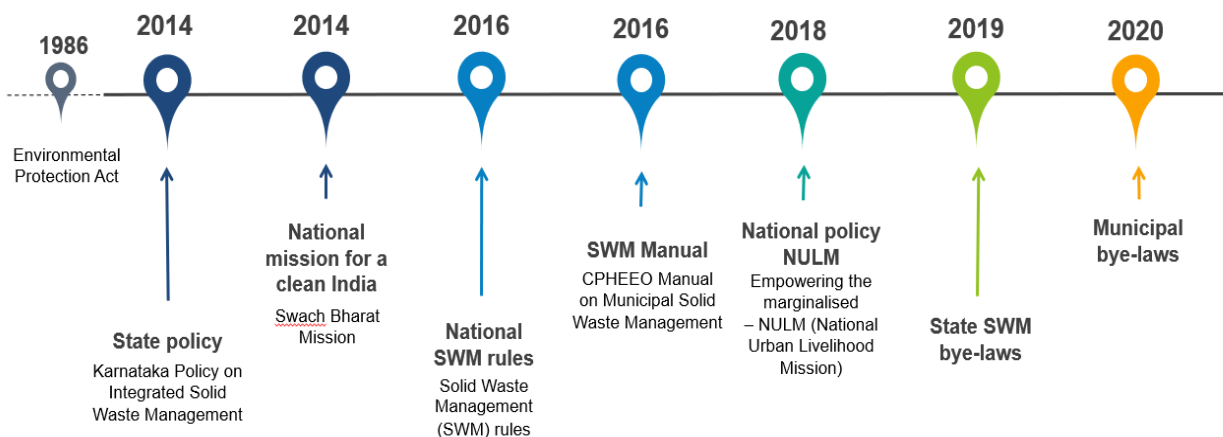


Figure 8: Timeline showing the analysis window of this research (Author's own).

6.1 Laws and policies

6.1.1 Central government level

6.1.1.1 National rules and manuals

The Environment Protection Act (EPA) released in the mid-1980s first showed environmental concerns by the central government (Priti & Mandal, 2019). It gives the central government the power to regulate all forms of waste. In fact, under this act, the Ministry of Environment, Forest and Climate Change (MoEFCC) has ratified a set of rules that regulate the management of various categories of waste products. Specific rules thus exist for e-waste, plastic, biomedical, construction and demolition and hazardous waste (these are illustrated in Appendix A1). They specify the obligations and responsibilities of different actors that produce these types of wastes and regulate their treatment, storage, transportation and disposal. Besides these material-specific rules, the need for regulations regarding waste generated in urban settings, particularly in very populous ones, arose later in the year 2000, and resulted in the Management and Handling rules of Municipal Solid Waste. They provide the legislative framework in which all urban local bodies in India operate. It is noteworthy that a public interest litigation filed by Almitra Patel, an environmental activist, was pivotal for the enforcement of the SWM rules by the Supreme Court (Madhav, 2010). This case demonstrates that a personal citizen's concern about the large-scale dumping of waste in the outskirts of Indian agglomerations, together with judiciary initiative has the power to change the policy landscape (CEERA, 2019).

The previously named Management and Handling Rules (2000) have more recently been replaced with the Solid Waste Management Rules 2016, issued by the responsible MoEFCC (see figure 8). The rules cover the entire waste generated in urban areas, except for the specific waste categories mentioned above. They apply to a broad range of areas and actors, going beyond urban local bodies (ULB) to include urban agglomerations and census towns, economic, industrial, transport and defence establishments, religious and historic sites as well as State and Central government organisations. The duties declared in the rules address waste generators, which refer principally to households, event organizers, street vendors, Residence-Welfare associations (RWA), gated communities, hotels and manufacturers. It is notable that the duties of the waste generators heavily focus on segregating and storing waste separately (SWM Rules, 2016; section 2.3.1). Moreover, the rules target all the relevant ministries, state secretaries or local authorities, which shows the overarching character of the SWM rules (MoEFCC, 2016). Any policy documents, guidelines or by-laws issued by state or local governments shall comply with the rules.

Also issued by the Government of India, prepared by the Central Public Health & Environmental Engineering Organisation (CPHEEO) (see figure 6, section 5) is the national manual on Municipal Solid Waste Management (see figure 8, section 6). The manual serves as guiding document addressed at Urban Local Bodies (ULBs). It incorporates a detailed step-wise framework for local authorities, which is supposed to support them in planning, revising and implementing municipal solid waste plans (CPHEEO, 2013). The technical aspects covering guidelines from segregation to various methods for

technologically treating waste are extensively addressed, such as waste-to-energy technology. However, the workforce that drives the current waste system and the fact that waste represents the livelihoods of a large number of people are put to the background. The diversity of waste pickers is not visible enough, due to the use of the terms “informal sector” and “waste pickers”, which puts everyone in the same basket. This simplistic approach can be viewed as problematic as it fails to deal with underlying issues of dehumanising practices. Referring to aggregated groups without precisising who is addressed additionally creates a certain distance to these people.

The CPHEEO manual is in line with the SWM rules, to which it often makes references, as well as with the country’s national vision of a clean India, the Swach Bharat mission (SBM), launched in 2014, as can be seen in figure 8. The mission to achieve nation-wide cleanliness is based on the two pillars of sanitation and solid waste management and has been considered as a paradigm shift for India’s cleanliness and waste management (Ghosh, 2015). Relating to waste management, the SBM primarily urges scientific processing, disposal and recycling of waste. The missions’ launch in 2014, officially in force for five years, witnessed euphoric propaganda from the government who campaigned and urged citizens to pledge for a clean India and has initiated challenges encouraging citizens to share their efforts that contribute to the mission (Swach Bharat, n.d.). However, the simplicity of this campaign is criticized for not capturing the real complexity around India’s “cleanliness” (Gatade, 2015). Apart from a meagre statement in the mission’s guidelines for urban areas, which encourages state governments to integrate informal sector workers and upgrade their working conditions, the document fails to address waste as a source of livelihood and problems linked to structural oppression (MoHUA, 2017). This resonates with observations by Gatade (2015) that emphasise the neglect of the Indian government in addressing the inevitable link between the “dehumanising” professions of sewer and waste pickers and the caste system in the Indian society. The Swach Bharat appears thus to be romanticising what happens on the ground. The Prime Ministers’ view on the occupation of sanitation workers is reflected in a speech:

I do not believe that they have been doing this job just to sustain their livelihood. Had this been so, they would not have continued with this type of job generation after generation.... It is impossible to believe that their ancestors did not have the choice of adopting any other work or business.

(Quoted in Gatade 2015, p. 33)

Contrarily to acknowledging that these people contribute to a clean environment at the cost of their own health, this statement accuses the workers themselves for being in this occupation. It deliberately fails to address the injustices in the present system. There is abundant evidence that links both the professions of sanitation and waste pickers to the lower cast of the Dalits (Center for Equity Studies, 2020). The above statement reflects the mindset of middle-class, encouraging the idea that a certain caste is condemned to their profession and indicates reluctance to change the status quo.

6.1.1.2 The convergence of two policies

The final national-level policy document identified, addresses a particular group, namely the “marginalised” group, referring to people working in the sanitation and waste sector. The aim of this policy

issued by the Ministry of Housing and Urban Affairs (MoHUA) is to converge the Swachh Bharat Mission with the existing “National Urban livelihoods Mission” (NULM). The NULM’s objective is to reduce the vulnerability of poor urban households by providing them access to “gainful self-employment” and “skilled wage employment” (MoHUA, 2018). Converging these two policies is born out of the perceived necessity to improve the quality of life of disadvantaged workers, identified as being primarily informal waste pickers and manual scavengers in the sanitation sector. In the document, offering skill training is emphasised in for the realisation of providing sanitation and waste management workers with the possibility to upgrade their livelihoods. The ministry advises local bodies to first identify existing waste pickers, then register them through the issue of identity cards. A skill gap analysis should identify required skills and enable access to training. Finally, they should be connected to households and institutions that require services. Thereby, the role of existing self-help groups (SHGs) is considerably put forward and municipalities are encouraged to outsource their activities to SHG members or appoint them as supervisors. Contract amendments are prescribed to engage a maximum number of existing waste pickers with the local body. The intention of the policy merge is also to make the scheme benefits under the DAY NULM available to workers in the concerned sectors. Besides skills training, this scheme is intended to allow them to receive funds and to apply for credit facilities for setting up small enterprises. Moreover, the policy mentions the importance of enabling them access to alternative, safer livelihoods (MoHUA, 2018). It is not clear whether alternative employment opportunities are meant within the sanitation and waste sector, as a different job role or within wholly different sectors.

6.1.2 State level policies and bye-laws

6.1.2.1 Policy on integrated solid waste management

The Karnataka policy on integrated solid waste management was notified in 2014, as a response to the pressing problems of the SWM practices, recognising the ULB’s inability to effectively provide waste management services. The policy proposes an integrated and self-governing framework for an environmentally, socially and economically feasible waste management in Karnataka. In order to achieve this, it suggests the development of appropriate technologies, emphasising the importance of final disposal facilities. It foresees a crucial role for the ULBs in entering into appropriate contractual agreements with private actors and self-help groups, to promote composting and the recovery of valuable materials. Regarding waste treatment, the document entails a detailed guideline on the use of various composting techniques, such as vermi-composting and further states that landfill should be only used for non-biodegradable and non-recyclable waste. Lastly, it addresses creating awareness among citizens to reduce dumping and change current behaviours towards the environment. This task is entrusted principally to NGOs (Karnataka Government, 2014).

6.1.2.2 Karnataka SWM bye-laws

First, it appears worthwhile to clarify the term “bye-laws”. According to the national SWM rules’ definitions, a bye law is a “regulatory framework notified by a local body for facilitating the implementation

of these rules effectively in their jurisdiction” (MoEFCC, 2016 in “Definitions”). The Karnataka Municipalities Solid Waste Management Model Bye-laws, promulgated in 2019 are directed at and applicable to all municipalities in the state. Urban local bodies can amend changes to the bye-laws based on specific local conditions and otherwise must adopt them. The bye-laws are said to supersede, thus replace, the superior SWM rules 2016. The rules outline in a detailed manner by whom and how the activities in every stage of waste management are to be carried out. Most importantly, throughout the entire bye-laws waste is always depicted as falling into one of the following categories:

- a) Bio-degradable Waste, also referred to as Wet Waste,
- b) Recyclable & Non-Recyclable, also referred to as Dry Waste,
- c) Domestic Hazardous Waste, including Sanitary Waste,
- d) Construction and Demolition Waste,
- e) Bulk Garden and Horticulture Waste,
- f) E-Waste.

The bye-laws prescribe all waste generators to segregate in these categories and store their waste in appropriate bins up until collection. They further outline in detail how the collection and transportation are to take place. Regarding public spaces, the municipality is responsible for setting up separate bio-degradable and non-bio-degradable community bins in all types of public spaces, including parks, roads, commercial areas. For the processing part of the waste management, the municipalities shall set up suitable facilities according to the waste type that is to be treated. Sanitary landfill or incineration are mentioned as the last resort for hazardous, sanitary waste or any other solid waste which cannot be processed by other methods (Urban Development Department, 2019).

It is noticeable that the bye-laws take into account that municipalities are likely to outsource any of the mentioned activities to a variety of actors. The latter are referred to as “agency/service provider”, understood as any registered company, society, partnership or organisation, including registered waste picker organisations, authorised or appointed to act on the behalf of the municipality. The task of the ULB is then to regularly review the operations and their compliance with the legislation (Urban Development Department, 2019).

6.1.3 Urban level bye-laws

Before the issue of the SWM rules, the BBMP had already recognised the need for a city-specific policy, due to its unique growth and expansion (BBMP, 2012). The local policy had identified a number of “Action Points” necessary for an effective municipal waste management. With the Karnataka bye-laws promulgated in 2019, the Bengaluru municipality have amended small changes in the urban local body’s bye-laws 2020. They apply to any solid waste that originates or is disposed inside of the BBMP’s jurisdiction. In regard to waste pickers, slight amendments to the state bye-laws can be observed and are presented in table 4, section 6.2.

6.2 Waste workers¹⁴ in Indian legislation and policy

The following tables 4, 5, 6 and 7 shall give an overview of various ways in which waste workers (both waste pickers and pourakarmikas) occur in India's policies, rules and laws published at national, state and local level. The documents included in this analysis are outlined in the above section and an overview is provided in table 3, section 4.3.1. The *state level* refers exclusively to the latest Karnataka bye-laws, 2019 in all sections of the tables, since Karnataka's policy on integrated SWM not address the role or rights of workers in the waste sector.

This part of the analysis first looked at whether waste pickers' and other waste workers' definitions are included in policy documents and how these differ from one another. It can be noted that only national and local legislation have most recently included a specific "waste pickers" definition. In contrast, the Karnataka bye-laws 2019 refer solely to "Agency or Service Provider", which is a broad term referring to all types of organisations appointed by the ULB, also explicitly including waste pickers' organisations. However, thereby the state bye-laws fail to address those not part of these organisations, in the definitions. Interestingly, they have a specific definition for waste "traders", referring to scrap dealers and itinerate buyers who take part in the purchase and sale of recyclable waste.

The definition of "waste picker" in the SWM rules (see table 4 below) acknowledges that their engagement serves as their source of livelihood. Contrarily, the Plastic Waste Management Rules 2016 make a differentiation between authorised and voluntarily engaged waste pickers, in addition to informally engaged waste pickers. However, in these rules the livelihood component is not addressed. They instead refer more simplistically to individuals involved in the picking of recyclable plastic.

¹⁴ Waste "workers" is used as an umbrella term including both waste "pickers" in the informal sector as well as contract workers in the formal one (see section 5.6).

Table 4: Illustration of the way waste workers (including waste pickers and pourakarmikas) occur in India’s policies, rules and laws published at national, state and local level (Authors’ own).

	National level	State level	Local level
Definition	<p>In SWM Rules (2016): Waste picker = person informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood</p> <p>In Plastic Waste Management Rules (2016): Waste pickers = individuals or agencies, groups of individuals voluntarily engaged or authorised for picking of recyclable plastic waste</p>	<p>Agency or Service Provider = any company, registered society, trust, partnership, limited liability partnership and/or any other registered entity including registered organisation of Waste Pickers and/or Waste Traders which has been appointed or authorised by Urban Local Body</p>	<p>Informal waste collector = individuals, associations or waste traders who are involved in collection, sorting, sale and purchase of recyclable materials</p> <p>Waste picker = person informally engaged in collection and recovery of non-biodegradable waste from the source of waste generation or from the waste generators directly and who earn their livelihood from the sale of the reusable and recyclable solid waste therein.</p> <p>Waste Workers = all such persons who are involved in waste management under BBMP.</p> <p>(1) Pourakarmika refers to street sweepers who collect street sweeping wastes and carry out cleaning of public places.</p> <p>(2) Helper- Who assists in collection of waste from door steps in the primary collection vehicles and in loading of waste in secondary transportation vehicles.</p> <p>(3) Driver- Who drives the primary collection and secondary transportation vehicles.</p> <p>(4) Supervisor- are the persons who are assigned to a mustering location or block to supervise the activities of the above waste workers.</p>

Comparing the definitions across the three levels, it becomes apparent that the newest urban by-laws entail the most extensive definitions, making differentiations on the basis of workers’ degree of formality as well as their tasks. More concretely, they differentiate between those waste “pickers” who are informally engaged in collection and recovery of waste from which they earn their living and waste “workers” referring to those under the directive of the BBMP. Included in these formal waste management activities are the *pourakarmikas* responsible for cleaning waste from the streets, *helpers*, who assist in collection activities, *drivers* and *supervisors*, who are advised to supervise activities in a particular location (BBMP, 2020).

It can be noted that, despite the definitions stated in the policies and rules, there is quite some ambiguity linked to the designation of waste pickers. While some are referred to as “informal”, others as “authorised” or “registered”. The distinction appears to have an impact on waste pickers’ relative access to waste. As per the SWM rules, waste generators must hand over their segregated waste to “authorised” waste pickers. On the other hand, “informal” waste pickers are most commonly mandated to operate the dry waste collection centers. At the state level it is specified that only “experienced” waste pickers should be involved in the operations of dry waste collection centers, which leaves room for interpretation. With exception of the SBM-NULM policy on marginalised livelihoods, the rules at all levels emphasise the authorisation or registration of waste pickers or their

participation in an organisation to be able to access waste and be involved in collection centers, as you can see in table 5.

The emphasis on registration can also be observed in the Plastic Waste Management Rules 2016 with regards to recyclers. The rules state that plastic waste is to be channelised to “registered” plastic waste recyclers. Interestingly, the Plastic Waste Management Rules 2016, which are thought to have a direct impact on waste pickers, as they specify the management of recyclable content, barely mention waste pickers. The only mention concerns one of the responsibilities of the ULB to engage with civil societies or groups of waste pickers. The failure of more extensively addressing waste pickers’ access to recovery facilities or sorting space is not comprehensible as it stands in contrast to the SWM rules, as can be seen in the “National level” column of table 5.

Table 5: Illustration of how the “Access to waste” of waste pickers is understood in the identified regulatory framework in the three governmental levels (Authors’ own).

	National level	State level	Local level
Access to waste	<p><i>In SWM rules (2016):</i></p> <ul style="list-style-type: none"> It is the duty of all waste generators (incl. gated communities, institutions, hotels, restaurants) to hand over segregated waste to <i>authorised</i> waste pickers and collectors, as directed by the municipality Facilities for sorting of recyclables should be set up to provide <i>informal and authorised</i> waste pickers with sufficient space <p><i>In SBM-NULM (convergence guidelines, see 6.1.1.2.):</i></p> <ul style="list-style-type: none"> Space for dry waste collection centres or composting should be allocated to <i>informal waste pickers</i> <i>Informal waste pickers</i> should be engaged in door-to-door waste collection contracts 	<ul style="list-style-type: none"> “Agency/service providers” should be allowed to sell non-biodegradable waste to <i>authorised</i> waste traders or recycling units Waste generators can directly deposit or hand over their dry waste to <i>registered waste pickers</i> or sell it to them at mutually agreed rates <i>Experienced</i> waste pickers, part of waste pickers’ organisations, should be involved in the operations of dry waste collection centres 	<ul style="list-style-type: none"> „Notified agency/service provider“ should be allowed to sell non-biodegradable waste to <i>authorised</i> waste traders or recycling units The delivery and sale of non-biodegradable waste by <i>waste pickers</i> at material recovery facilities should be facilitated by the BBMP Decentralised waste facilities (such as DWCCs) should be operated by waste pickers/collectors/SHGs and managed by the BBMP (through an organisation)

The SWM rules 2016 mandate India’s state policies to formulate broad guidelines on the integration of waste pickers and to recognise their crucial role in waste management. It is then the responsibility of the local authorities to establish such a local system that facilitates the integration of waste workers. It is worth mentioning that the 2018 proposed Karnataka bye-laws, barely mentioned the integration of waste pickers, thus omitting the prescribed 2016 rules. In contrast, the revised 2019 bye-laws designate the welfare, safety and training of pourakarmikas as well as the integration of informal waste pickers. It was found that the additions presumably followed a state consultation that took place with waste pickers from all across Karnataka and was organised by the Alliance of Indian Waste-pickers in collaboration with Hasiru Dala (Arora, 2018). The welfare measures now included, prescribe regular health check-ups and the compliance of labour regulations regarding wages, working hours and statutory benefits. Furthermore, the ULB shall provide protective work equipment and basic amenities to

pourakarmikas and informal waste workers. Trainings to both pourakarmikas and informal waste pickers are to be provided by local bodies or authorised institutes. Trainings are adapted to the foreseen tasks of both workforces and include safety standards, preferred collection, transportation and disposal methods, as directed in the regulations for pourakarmikas (Urban Development Department, 2019). Waste pickers shall be trained on segregated collection, the SWM rules and topics such as health and environment.

Table 6: Illustration of how “welfare”, “occupational safety” and “training” are understood in the identified regulatory framework in the three governmental levels (Authors’ own).

	National level	State level	Local level
Welfare	<p><i>In SBM-NULM (convergence guidelines, see 6.1.1.2.):</i></p> <ul style="list-style-type: none"> Information on welfare programs should be disseminated by so-called City Livelihood Centers (CLCs) Under the DAY-NULM fund support, interest subvention on loans are said to apply to vulnerable occupations, such as waste pickers 	Welfare benefits related to wages, working hours, holidays, insurance and maternity benefit should be ensure by the ULB for pourakarmikas and “other eligible worker”	Identical points as in the state bye-laws
Occupational safety	<p><i>In SWM rules (2016):</i></p> <p>It is the responsibility of the facility operator to ensure that <i>all workers handling with waste</i> are provided with protection equipment (uniform, fluorescent jacket, hand gloves, raincoats, appropriate footwear, masks)</p>	Protective equipment (uniforms, shoes, hand gloves, masks), potable drinking water, toilets and first-aid facilities, regular medical check-ups	Identical points as in the state bye-laws
Training	<p><i>In SWM rules (2016):</i></p> <p>Trainings on solid waste management are to be provided to waste pickers and collectors. No specifications</p> <p><i>In SBM-NULM (convergence guidelines, see 6.1.1.2.):</i></p> <p>Waste pickers fall under vulnerable occupations and are thus entitled to benefit from the DAY-NULM, such as skill trainings regarding safety, material recovery and counselling regarding substance abuse</p>	<p>Trainings should be provided by the ULB or any “reputed” institute/agency to pourakarmikas and informal sector workers.</p> <ul style="list-style-type: none"> For pourakarmikas topics include segregated collection and transportation, processing and disposal of waste as directed by regulations. For informal waste workers topics include authorised processing facilities. General: Environment, health, safety standards 	Identical points as in the state bye-laws

The state level publication also specifies ways for implementing the widely promoted integration of informal sector workers. It is stated that they shall receive identity cards and shall be registered by the municipality or by a recognised non-governmental organisation. The focus hereby lies on involving waste pickers first and foremost in dry waste management activities. This is believed to upgrade their working conditions, as it claims to facilitate the delivery and sale of recyclable goods (Urban Development Department, 2019). However, it appears worrisome that, as can be seen in table 7, the Karnataka

policy entitles only “Agency/service providers” to retain the amounts earned by selling waste. The exact measures prescribed by the Karnataka government have been adopted by the latest BBMP by-laws which saw an upgrade from the previous ones, illustrated by a larger section dedicated to workers in the waste sector.

Table 7: Illustration of how the rights to earnings are understood in the identified regulatory framework in the three governmental levels (Authors’ own).

	National level	State level	Local level
Rights to earnings	<i>In SBM-NULM (convergence guidelines, see 6.1.1.2.): Informal waste pickers should be allowed to earn an income through waste recovery</i>	“Agency/service providers” are entitled to retain the amounts earned from the sales	<ul style="list-style-type: none"> ◆ “Notified service providers” are entitled to retain the amounts earned from the sales ◆ Pourakarmikas and street sweepers are to be paid by the BBMP

6.3 Policy pillars that affect Bengaluru’s waste pickers’ occupation

The sections below have been identified as policy motives that affect Bengaluru’s waste pickers and collectors’ occupation in one way or the other.

6.3.1 Source segregation and door-to-door collection

A major aspect of the SWM rules 2016 is segregation of waste at source. Segregation is given particular importance, as it is a prerequisite for recycling, which is the second most-preferred option in the integrated solid waste management hierarchy, promoted by national guidelines (CPHEEO, 2016). While the previous waste management rules solely stipulated the separate processing of biodegradable waste and mandated the recycling of recoverable materials from mixed waste, as per the new rules, segregation shall take place at the source. All waste generators must now segregate their waste into three categories: biodegradables (wet waste), non-biodegradable (dry waste including paper, plastic, metal) and domestic hazardous waste, which includes sanitary waste. Segregation is to be carried out by all municipal waste generators, including institutions, gated communities, hotels and restaurants. This also applies to event gatherings exceeding hundred people (MoEFCC, 2016). According to the by-laws, all waste generators must also ensure that their segregated waste is properly stored and deposited in a way that enables swift collection. In the case of non-compliance, the municipality shall levy fines. The BBMP shall also penalize contracted collectors or BBMP officials that mix already segregated waste (BBMP, 2020).

It has to be noted that the realisation of source segregation clearly requires the involvement of the public. As proclaimed in the SBM Manual, public awareness and education about the functioning of SWM services and the role of waste recycling need to be raised (CPHEEO, 2016). Interestingly, how-

ever, the promotion of segregation appears to differ across ministries, showcasing a substantial inconsistency. In contrast to the mentioned categorisation promulgated in the SWM rules, as part of the Swachh Bharat Mission the Ministry of Urban Development promotes a two-bin segregation as illustrated in Figure 9.



Figure 9: Two-bin segregation campaign to encourage recycling among citizens (Ministry of Housing and Urban Affairs, n.d.).

It is expected that widespread segregation of waste in different channels could contribute to an upgrade of waste pickers' livelihoods only under certain conditions. In order for them not to lose access to waste, it is crucial that they are given the right to collect the segregated waste either directly from the waste generators or from collection points. The SWM rules stipulates that waste generators shall hand over their segregated waste only to "authorised" waste pickers. The local policy specifies that the recyclable waste is to be handed to "registered" waste pickers, while other types of waste are channelled to designated agency. Whereas the SBM-NULM guidelines (see section 6.1.1.2.) explicitly urges the involvement of informal waste pickers in door-to-door collection activities, the Karnataka and BBMP bye-laws do not directly encourage their involvement. Instead, door-to-door collection appears to be "reserved" to formally employed pourakarmikas. Nevertheless, it is stipulated that the collection and transportation of solid waste by any registered society, including waste pickers' organisations can take place only in certain cases. For instance, in the case that waste generators explicitly engage such parties for waste management services (Urban Development Department, 2019).

6.3.2 Decentralised waste management

Decentralised waste management is a recurrent theme pledged by the SWM rules, Karnataka and BBMP bye-laws and one that has also been addressed extensively by the guiding CPHEEO manual. A successful decentralised approach to waste management goes hand in hand with a system where waste is segregated at its source as a preparation for inorganic and organic material recovery (CPHEEO, 2016). For biodegradable waste the BBMP bye-laws encourage institutional and commercial establishments to process this type of waste on-site, to the extent that is possible. Along the same lines, households should be encouraged to compost their own wet waste (BBMP, 2020). This approach reflects the central rules as well as national guidelines of prioritizing decentralised to centralized facilities. Sufficient space for decentralised facilities is claimed to be a crucial determinant, according to the CPHEEO

manual. The lack of land in dense urban areas is, however, represented as a limitation to decentralisation and might not allow for the establishment of facilities in all communities. Thus, large-scale centralized processing, such as windrow or in-vessel composting are presented as the second-best option (CPHEEO, 2016).

As for non-biodegradable waste, material recovery is the preferred option, which is emphasised at all three levels of government. For dry waste, decentralisation is understood primarily in the sense of establishing local facilities close to the source of waste generation where the waste is processed, and valuable material recovered. This method is meant to reduce the amount of waste that needs to be transported and handled at landfill (BBMP, 2020). These local processing facilities where waste is sorted and aggregated are referred to as “Dry waste collection centres” (DWCCs) or “Material recovery facilities” (MRF). They should include adequate infrastructure, such as electricity, drinking water and toilets. Importantly, a congruent component found in the revised documents is the association of these bulk sorting centres with the occupation of waste pickers. Their establishment is argued to be positive for the informal sector as it allows for more job opportunities than centralised facilities with higher mechanization (CHEEO, 2016). National law particularly stresses the importance of establishing such facilities in order to provide waste pickers with sufficient space for their sorting activities (MoEFCC, 2016). In Bengaluru, the DWCCs are to be managed by the BBMP through Self Help Groups or organisations of waste pickers. Both the state and local bye-laws proclaim that waste pickers should be the ones operating the facilities, which would facilitate direct access to waste. This would also allow them to have a regular working space. As per local bye-laws, waste pickers should ultimately be enabled to manage the centres independently as entrepreneurs (BBMP, 2020). This realisation would be a considerable progress in terms of improving waste pickers’ inclusion into society. However, its implementation is likely to depend on the mediation through NGOs to promote their ability of taking on responsibility and on management trainings provided to workers.

As specified in the Karnataka Municipal Corporations (Ward Committee) Rules 2016 (cited in BBMP, 2020), ward-level committees play an important role in implementing the decentralised waste management system. In collaboration with the BBMP wards are tasked with identifying suitable land for the establishment of decentralised facilities. Furthermore, they must regularly quantify the waste generated in the ward and assess the processing facilities (BBMP, 2020). Micro-level ward plans shall be created by the BBMP and other relevant stakeholders to assist the collection of information required for an effective management. Collection times, points, vehicles, routes, manpower and other relevant information must be recorded and also made available to the public (BBMP, 2020).

7. Results III: Media analysis

This section outlines identified issues and concerns related to waste pickers and the governance of SWM as framed in the Indian and city media. As mentioned in the methods section 4.1.2, the media analysis is used to provide an independent and diverse view on the governance of waste management and its effect on waste pickers. It highlights key issues, concerns and events in the sector and discusses the implications thereof for waste pickers. Details on the search terms used, from which newspapers the news items were retrieved, and inclusion/exclusion criteria are illustrated in the methods section 4.3.2. Before coding the news items, an overview of “basic information”, “framing tools” and “content” elements was created, see Appendix E1 for an excerpt of the overview with different sub-categories. This was used to seek out the most relevant data in analysing sources for answering the research questions and has facilitated the data analysis.

The first step for answering sub-question 2 (see section 1.5.1), was to identify various ways waste pickers are portrayed in the news and the major issues they face. Based on the content, the title and the framing tools of the articles, it has been observed that the main messages critically differ between the news items. While some focus on individual stories of waste pickers, others concentrate on aspects of waste governance, enhancing the understanding of how governance developments affect waste pickers. There are a number of articles that shed light on the efforts of member organisations and how waste pickers appear to have become beneficiaries of these new organisational arrangements. Based on these observations, this section is divided into three parts: The first chapter exhibits the different kinds of hardships that waste workers face. The second one draws attention to the impact of civic initiatives on waste workers’ livelihoods. And the third, outlines the representation of the BBMP with regards to SWM in various news items.

7.1 Different types of hardships

This section lays out the causes of unpleasant conditions experienced by waste workers, understood as hardships, as they are represented in various news items. As illustrated in figure 10, hardships faced by waste workers are found to differentiate in physical, monetary (economic) as well as suffering caused by suspicion, violence and brutal events.

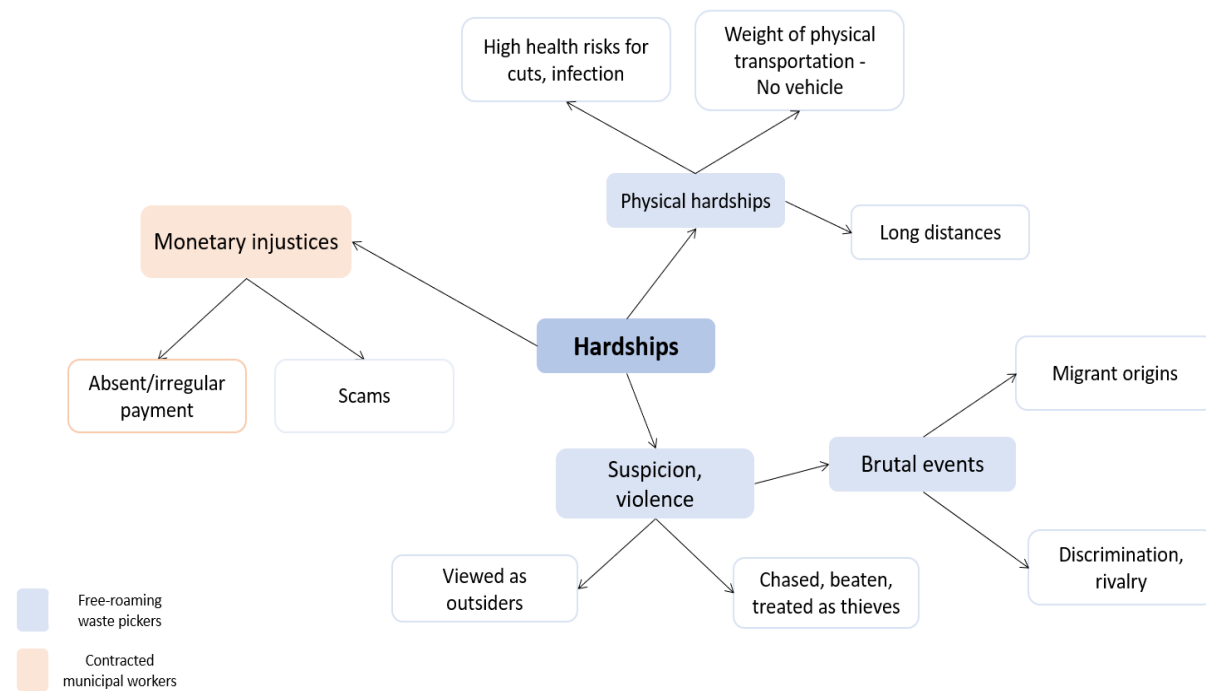


Figure 10: Types of hardships faced by free-roaming waste pickers and municipal workers (Authors' own).

7.1.1 Physical hardship

Waste workers not employed by the BBMP or by other actors relying solely on their individual ability to collect and sort large amounts of waste are found to be the most vulnerable ones. These waste pickers can be referred to as free roaming, meaning they independently navigate the streets or dump sites in search for valuable waste¹⁵. Physical hardship is one aspect that characterizes their vulnerability. They typically start very early in the morning, around 2-3 am, presumably in order to encounter as few people as possible and to avoid confrontations with authority officials or middle-class residents. Furthermore, starting early in the morning also means that the city workers (pourakarmikas) have not yet cleared the garbage. Walking long distances, covering from about 8 to 25 km per day along roadsides, navigating alleys or dumpsites and bending around 1000 times per day is common for these waste pickers. Working without societal recognition means that most often no carts, transport vehicles are available to them, making the collection of dozens of kilograms of waste physically challenging. This adds to the dangerous essence of picking and sorting waste with bare hands. Working without protective gear makes it likely for them to suffer from cuts and infections, particularly when sanitary and medical waste are not separated.

“We open sacks and there are soiled sanitary napkins in newspapers, human excreta in polythene, shards of glass, syringes or nails. We cut ourselves, develop rashes and infection. Rotten food makes

¹⁵ Waste pickers look out for valuable waste, locally known as “dry waste”, as it comprises materials that are recyclable and thus carry high value for the recycling market. These materials are mainly plastic, paper, glass and metal components.

us sick. But we have no pension, no recognition, no medical facilities”
(Indiaspend, 2017)

...is a quote from a rag picker¹⁶ in New Delhi, who speaks for many rag pickers collecting waste from the streets and dump yards and could have certainly been said by a waste picker in Bengaluru, as most waste pickers face these hardships. One journalist points out that contractual agreements with private garbage companies in which some waste pickers have been forced into, do not wipe out their physical hardships. The promised fair compensation, protective gear and uniforms are reported not to be delivered.

Governmental medical facilities are alleged not to be accessible to them, as the workforce opposes to treating them. This means that when the main earner of a family falls sick, they are forced to make use of private and costly services or move back to their home villages to recover. Any sickness or injury thus translates to a loss of income or even to having to bear large expenses. Some journalists ascribe the lack of medical facilities, social security and pension to the total lack of recognition by middle-class citizens, authorities and society as a whole. However, it has to be noted that the root causes for their lack of recognition and access to social security is not addressed.

At this point, it seems appropriate to add that hardships related to basic human needs are not reserved to waste pickers. The media analysis reveals that, although part of the formal sector, contract workers, locally named pourakarmikas, do face inhumane working conditions mostly in terms of basic rights violations. Most of the pourakarmikas are employed in protests, such as the May Day rally. Protests are used by this workforce to raise their prevailing lack of access to toilets and drinking water during work hours. A few authors, importantly, put these inhumane working conditions in relation to the fact that the BBMP outsources waste management services to contractors, primarily corporates that have business interest in waste contracts. Contractors' primary interest for business can be illustrated by the example of push carts used for waste collection. Using these push carts poses a threat to injuries, as they have not been replaced for many years.

7.1.2 Suspicion, violence and lack of respect

Numerous individual stories of waste pickers show that these people are exposed to exploitation, unfair treatment and suspicion from different sides of society. Both male and female waste pickers experience harassment, said to be performed by police as well as by middle-class residents. Acts of humiliation, contempt and violence come to light in news items that reproduce concerns expressed by waste pickers, revealing personal stories of individuals. Prominent difficulties they face include being accused of being thieves, criminals and treated as untrustworthy individuals. Some are thrown stones at, teased, others are chased away or beaten. The day-to-day encounters of a single mother, a waste picker called Mary, clearly demonstrate how waste pickers are perceived by a larger section of society. She is:

¹⁶ This designation is frequently used in the media, its meaning being equivalent to “waste picker”.

“Often harassed by lewd and drunk men, questioned by the police, threatened by other contract workers, laughed at by kids or accused by the neighbours of being a thief”

(Chandran et al., 2014).

Waste pickers’ primary wish from the municipality would not cost them much. As stated by another female waste picker, they do not ask for much from the government, except for respect and support:

“We want them to support us and when we are on the streets, we don't want to be harassed by police”

(Annamma in DNA, 2013)

7.1.3 Monetary injustice

Whereas harassment by the police and citizens is a prominent theme in the media, the relationship with middlemen appears to be less addressed. However, since waste pickers’ livelihoods depend on their selling activity of collected and sorted dry waste, middlemen dealers, to whom they sell their recyclables, play an important role in determining their earnings. Very few news items have highlighted the exploitation by middlemen, particularly towards women, as being a major issue waste pickers face. Taking advantage of their illiteracy and lack of bargaining power, these dealers use misleading practices when purchasing the recyclables. Scams occur for instance when the weight of the waste is reduced by means of cheating and the offered price is also set lower than the market rate. Consequentially, waste pickers are the ones poorly exiting of these “deals”. They can lose up to 60% of their merited daily earnings. Due to these wrongful practices, women are in some cases forced to take credit from the middlemen to meet their needs. However, this bounds them to sell their valuables to the same dealers that offer them unfair prices for their daily collection, placing them in a vicious circle. This type of exploitation strengthens a system where illiteracy and poverty of waste pickers, particularly women, are taken advantage of.

It needs to be underlined that monetary injustices are not unique to “free roaming” waste pickers, but are also experienced by those employed by the municipality, pourakarmikas. Unregular pay or complete absent payment is portrayed as a common complaint from pourakarmikas to the BBMP. They are for example covered in the news when their payment is erratic or deferred for six months. From an individual case it was found that the absence of payment relates to wrongful behaviour from the city’s contractors. Falsifications of the machines where workers are required to register their attendance (which have been put in place to prevent fake salaries by contractors) are used to declare that they have not worked. These are evidence for a clear exploiting behaviour.

7.1.4 Outlying poverty and migration

The media analysis sadly also shows the life-threatening dangers that waste picking as an occupation entails. A few short individual stories witness murder attacks and one road accident of waste pickers. These stories reveal that a number of societal hazards are tied to their identity and nature of their occupation. Noticeable are two confrontations between a waste picker and other “shed residents”, called “friends” in one article, both ending deadly for the waste pickers. Whereas in one of the two

cases the link between the murder and the occupation of the waste picker is unknown, the other one mentions a fight over the work areas, which indicates that waste pickers are also exposed to brutal rivalry. Although information about the origin of the victim is not always reported, it is worthy to note that the cases are often tied to migration and miserable living conditions. It can be stated that almost all reported brutal events included young waste pickers either with migrate origins and/or living in informal settlements, thus hinting a correlation between brutality and migration/informal settlements. This finding is in alignment with a study by the Indian Institute for Human settlements (IIHS) which evaluated the vulnerabilities among social groups in urban areas of Karnataka. The study focused on informal settlements around Bengaluru and found that they are inhabited by a large number of working class people that migrated from rural areas from within and outside Karnataka (IIHS, 2017). For example, in the settlement of Hebbal the majority of its inhabitants are migrants from West Bengal that work as waste pickers. The drivers of migration include climatic factors, such as unreliable rain patterns, cyclones, floods, failure of agriculture as well as socio-economic inequalities based on class and caste. The observations by the IIHS of two informal settlements in Bengaluru finally illustrate that the impoverished lives that these migrants escaped were preserved in their new homes. The main cause for this is exclusionary urbanisation which forces them into precarious jobs, such as rag picking. The language barrier and lack of negotiation power further increases these migrants' vulnerability, resulting in social exclusion (IIHS, 2017).

While the brutal events involving waste pickers tend to be reported in a highly concise and unthorough manner, one journalist dedicates substantially more attention to discrimination towards migrant populations and exclusionary urban mechanisms. Scarcity of employment opportunities is stated to be the root cause for which interstate migrants, for instance from West Bengal move all the way to the South of India in search for livelihood. The murder of a 20-year-old rag picker from West Bengal is illustrated as a consequence of discrimination and violence against migrant waste pickers. The author also emphasises that this case symbolises dominant city developments that reinforce the divides between residents. These divides are reflected in the story of a young man who lived in a migrant colony with his mother and was beaten to death by local landowners for taking or stealing (depending on how this is viewed) an electricity wire. This brutal story demonstrates the complex situation many waste pickers find themselves in, relating to a lack of public understanding that they collect any unguarded items that they view as valuable scrap. Instead of understanding that waste is their livelihood, local residents view them as outsiders, with fear, suspicion and treat them with limitless brutality.

Munnekolala is the name of the settlement where the young rag picker lived and where the incident occurred. It is one of the 111 outlying villages that became part of the city of Bengaluru when the Bruhat Bengaluru Mahanagara Palike was formed in 2006. One of the "wrong" consequences of these developments is related to the land prices (Chandran, 2017). In a period of ten years the land values have seen almost a 10-fold increase, from Rs 600-700 per square feet to Rs 4,500-5000. In the village of Munnekolala it is common that men leading recycling operations, locally called thekedars rent out land from local landowners and sublet it to ragpickers.

Socio-economic inequalities have also been observed among pourakarmikas. One article in particular has addressed the “caste angle”, thereby acknowledging the link between waste-sector occupations and the caste factor. The article sheds light on the preference for certain municipal waste-sector jobs among pourakarmikas that have been in Bengaluru for years or generations. The latter prefer to carry out street sweeping and driving against the physical waste collection. Therefore, it was found that contractors rope in marginalised groups from villages to fill the less wanted positions (Sriram, 2019).

7.1.5 Chapter conclusion – a critical review

The review of media items related to waste pickers in Bengaluru points to certain aspects that require closer attention and need to be critically considered. First, the researcher points out that the newspapers reviewed include some of the most circulated English newspapers in India and Bengaluru. Besides these more prominent newspapers, a few exceptions consist of more critical independent news sources, such as Feminism in India, who aim to magnify the voices of women and marginalised communities or Citizen Matters Bengaluru, reporting on local urban issues. The most circulated newspapers, as for Times of India, whose audience represent two thirds of total readers being graduates or post-graduates, mainly target the top end of society (Times of India, 2020). The divide between journalists/ readers and the subjects of the news items, might explain why in-depth urban marginalisation and the discourse on castes is rarely addressed. Some journalists do point to the traditional issue of viewing waste pickers’ occupation as dirty and untrustworthy. However, only a minority of the reviewed articles tackle underlying issues to the waste occupation, related to castes and urban marginalisation.

Second, portraying waste pickers primarily as miserable and destitute individuals by highlighting their daily hardships can have two effects. On one side, the attention driven to their precarious livelihoods can generate visibility on these livelihoods and incentivise middle-class citizens to alter their behaviour towards them. On the other, focusing merely on the visible hardships that waste pickers face, fails to incorporate a much-needed discussion on exclusionary urbanism and overlooks the fact that waste pickers are trapped into a system of socio-economic marginalisation.

7.2 Waste pickers portrayed as heroes

It is important to mention that certain news items emphasise the contribution of waste pickers to the environment and society. Terms used to underline this include “green workers”, “environmentalists”, “saviours of the environment” and “heroes”. These articles highlight their contribution, understood in environmental and financial terms and supported by a number of studies that have attempted to quantify it. Waste workers altogether are estimated to collect and sort one third of the daily waste generated in Bengaluru (3000-5000 tonnes per day). Owing to them, a substantial part of the total waste is recycled instead of going to landfill. What is less visible is the environmental benefit resulting from the recovery of the material they collect and sort. Material recovery saves considerable amounts of energy as well as carbon gas and methane emissions, mitigating climate change. The articles that underline waste pickers’ environmental contribution, also turn to their economic part, accentuating that their

hard work is responsible for colossal waste-management cost reductions for the municipality amounting to Rs 84 crore (or 11.3 million US dollars). Despite their remarkable efforts, references such as “unsung” and “invisible” relate to the undeserved neglect by society towards them. Numerous articles underline the ironic and sad fact that waste pickers do not receive the dignity and remuneration they deserve for performing their services that contribute enormously to keeping the city clean. Figure 11 shows titles and excerpts of articles that acknowledge and emphasise their contribution. This informational content can be seen as a first step for educating readers on the contribution of waste pickers and for increased awareness on the problematic magnitude of waste dumping.



Figure 11: Views of waste pickers' contribution in the media (Authors' own).

Interestingly, the waste pickers' own perception of the extent of their contribution varies. Whereas one waste picker thought they were not worthy of being interviewed, others are very well aware of their “bigger purpose” beyond earning an income. The 47-year-old Lackshmamma with four grandchildren, for example, claims she has never felt inferior because of what she does, although she works in the most unhygienic conditions and covers large distances every day.

7.3 Waste pickers benefit from civil initiatives

While some journalists draw attention to the destitute life of waste pickers in Bengaluru, others primarily focus on the actions and outcomes of civil society or start-up initiatives that aim to improve the quality of life of waste pickers, besides changing the way waste is managed. This section thus focuses on the ways waste pickers' livelihoods are claimed to be improved. Furthermore, it explains what changes occur in their lives when involved in civil initiatives, often in collaboration with the BBMP.

7.3.1 The importance of ID cards and uniforms for increased recognition

The issue of identity cards by the BBMP to thousands of waste pickers is celebrated in numerous media articles and depicted as being one of the milestones for achieving recognition and changing the public perception of waste pickers. The efforts of Bengaluru's waste pickers' cooperative Hasiru Dala are represented to have majorly contributed to and facilitates this milestone. Box 1 below outlines the areas of work of the NGO and the impact of their efforts for waste pickers.

The reduction of police harassment is framed by most articles as a positive outcome of issuing identity cards. Together with uniforms, ID cards are stated to have stopped disrespect and humiliation that waste pickers previously faced. Some journalists emphasise the respect gained for their profession. For instance, being part of a structure has helped some to bring their drug consumption to a halt or enabled some to send their children to college. Others argue that it is the interplay of having received identity cards, uniforms, in some cases protective working gear that makes their work more bearable. The resentment by some waste pickers is that they are now seen as professionals, just like other civic workers. One article depicts the positive outcome for waste pickers as such:

*“The identity card made them the legitimate children of the republic”
(Hard News, 2014)*

Others, however, point out that their daily struggles to cover food and rent expenses have continued despite the issue of ID cards. Thus, although it is crucial to highlight the progress achieved by the collaboration of NGOs and the municipality, one must note that it would be deceptive to conclude an overall increase of welfare amongst all waste pickers. From success stories reported in the news it cannot be concluded that harassment has fully ended. It has to be questioned whether a piece of paper can change the culturally embedded power plays and the views of this “unclean” vocation that have dominated the past decades. Officially, the identity cards are signed by the municipal Commissioner, which means they have the right to social welfare services, such as scholarships for children from the government. However, only one article has been found that witnesses such scholarships for children of waste pickers.

Box 1: Hasiru Dala

Hasiru Dala is a pioneering non-profit and community-based organisation that advocates for the recognition of waste pickers. One pillar the organisation has worked on for many years, is the issue of identity cards, which are required by the government to access social security. In order for this to happen, the organisation approached the municipality to raise awareness on the contribution of waste pickers. Although the government agreed to issue occupational ID cards signed by both local officials and by the NGO, challenges associated to the proof of residency prevail, since many waste pickers reside on rental land or slums, making it difficult to prove permanent dwelling. Hasiru Dala thus helps them build proof of their dwelling. Furthermore, they help waste pickers by creating awareness on the different existing schemes that apply to the poor and on the fulfilment of criteria for application. These schemes include specific financial programs by age, gender or caste as well as education scholarships for them and their families. For migrant waste pickers, it is even more problematic to make use of social security schemes, as they have documentation from other states and can thus often not take advantage of basic food security and welfare schemes in the state they work in. The organisation thus advocates for “portability” of social security, which would enable people from other states to benefit from the schemes of the state they work in.

Hence, the organisation can be seen as an interest agency acting between the local government and waste pickers. This also becomes apparent when looking at the trainings offered by the organisation, that address both local officials and directly waste pickers. Trainings with municipality officials aim at improving their understanding of the informal sector which results in more open engagement with waste pickers. Moreover, Hasiru Dala played a major role in convincing the BBMP to leverage waste pickers’ skills and knowledge on dry waste and let them operate DWCCs. At the same time, trainings for waste pickers focus extensively on leadership development, for instance on running a DWCC, but also educating them about other opportunities outside of the work with recyclables. Hence, Hasiru Dala commonly facilitates various jobs that upgrade their working conditions, such as sorting jobs in different waste-picker-driven entrepreneurship, waste management service companies, event management, composting plant or housekeeping companies. Facilitating upgraded opportunities for waste pickers is critical to the organisation. With the municipal services getting stronger and more efficient, the organisation attempts to make waste pickers aware of a likely scarcity of waste on streets in the future.

Regarding participation channels for waste pickers, the organisation created digital spaces, such as WhatsApp groups, through which they can directly communicate with commissioners or engineers in charge. This channel allows also illiterate workers to leave voice messages and express their concerns.

7.3.2 Forms of empowerment

The news items that highlight the work of civil organisations that aim to improve the livelihoods of waste pickers, inherently address trainings provided to members of the organisations. Most journalists portray trainings as being highly beneficial for waste pickers, as they argue that they are provided with the opportunity to develop their skills and eventually become micro-entrepreneurs. Trainings are provided first and foremost by NGOs, in the form of workshops, said to be conducted in small groups of members. Topics vary and often refer to waste segregation, which seems surprising since segregating waste into various categories represents the essence of their occupation. One would therefore assume that waste pickers already possess segregation skills. More comprehensible are workshops aiming to help waste pickers create a small business of their own by equipping them with management or business acumen. For instance, Hasiru Dala has permitted distinct individuals to receive a training from Jain University. Furthermore, the organisation also offers trainings to become certified scrap dealers. Training modules included financial and legal aspects, maintaining accounts, human resources skills, but also work hazards and standards to be followed. A paramount advice given to participating waste pickers that roam the streets in search for waste, is to organise themselves in small groups, believed to reduce teasing and public harassment. Furthermore, the NGO Saahas (Box 2) identified the importance of educating waste pickers on environmental threats as well as on health hazards.

Box 2: Saahas' education activities

Saahas is a 20-year-old NGO working in the waste management field across different states and in many Indian cities, including Bengaluru. The organisation implements privately-funded projects in specific urban and rural areas. A large part of Saahas activities centres upon educating waste pickers on environmental threats as well as on health hazards. For instance, one objective of this work has been to counter the activity of some waste pickers who burn the low value waste, which they cannot resell. Of course, taking these low value materials to DWCCs where they are then sent to cement clints, would cost them time and money, without retrieving any benefits. A second issue was found regarding basic protective equipment like shoes, gloves, masks, that the NGO hands out. Many waste pickers have been picking for up to 20 years with bare hands and are convinced that this way is quicker and easier than using gloves. Despite the safety intention of the NGO, not everyone is willing to work with protective equipment, as they believe to know which materials will harm their hands and what they can touch.

Management trainings are also prominently reported in relation to so-called dry waste collection centres (DWCCs). These centres are ward-level establishments that provide waste pickers with space to sort paper, plastic and metal scrap, where it can then be stored before it further goes to the recycling industry. The DWCCs are mainly run by non-governmental organizations, such as Hasiru Dala, Swachha

Eco Solutions and Saahas who engage waste pickers to become managers of these centres (Box 2.1 illustrates Saahas' inclusion activities).

Box 2.1: Saahas' inclusion activities

The social inclusion of waste pickers plays an important focus area of the organisations' work. The NGO provides support to waste pickers by working with the BBMP to set up infrastructure, particularly localised waste storage centres. Facilities to store materials allow them to generate more revenue, as they can sell higher quantities of valuable waste. Waste pickers that are approached by the NGO or the other way around are advised on the location of the closest centre and on ways they can get engaged. Although being employed by the NGO translates in a regular and higher income, it also comes with fixed hours. Preferences depend on the individual and vary from preferring a formal job with fixed hours to not wanting to give up their freedom. The flexibility of choosing when to work is convenient for many, especially for those who have to bring their children to school or cook for their family.

It should be noted that the impact of the NGO happens on a very small scale and affects less than one percent of the city. Therefore, instead of implementing projects in as many locations as possible, their greater objective is to create sustainable models that can be followed by the municipality. Projects have a duration of 1-3 years, after which the people employed should be able to generate revenue by themselves. Many waste pickers are reported to have become successful entrepreneurs owing to their knowledge on selling particular materials at high prices and their network of people in the field. Moreover, the ability of renting a vehicle and having sorting and aggregating space is found to facilitate the process of becoming an entrepreneur. Being self-employed and having a small team of 4 people or some vehicles allows them to be assigned by the municipality to handle a specific area. However, achieving this stage takes time and may require them to first build rapport with local officials.

The establishment of centres operated by waste pickers has been made possible through negotiations between Hasiru Dala and the BBMP which have led to the "Memorandum of Understanding (MoU)". Under this agreement the municipal body has given allowance to former informal waste-pickers (now authorised members) to operate the DWCCs and be responsible for the entire management of dry waste. Most news items perceive the establishment of these dry waste centres as an important step for officially recognising the work of waste pickers and as a way of including them into the waste management system. However, it should be noted that it is not clear how many waste pickers have the chance to work in such an organised facility. Although over time the construction of new centres has been progressing and 129 of 198 wards have DWCCs, today the ambitious target of the BBMP is to establish a dry waste collection centre in each ward of the city. Issues found were linked to the lack of DWCCs in some wards, meaning that the ones in operation have to deal with large quantities of waste. Upgrading the infrastructure in terms of expanding the space of existing centres and setting up toilet facilities was also identified as a need by waste pickers' organisations. Box 3 below depicts ways in which the company Sweep Smart contributes to the upgrade of some DWCCs.

From the news items it is not clear whether a “selection” for positions at DWCCs takes place. Even though NGOs provide them with the necessary business skills and expertise to manage a waste collection centre, eagerness to learn new and leadership skills appear to be crucial for becoming a DWCC manager. The majority of the managers are found to be women. Some news items depict their lives as having been transformed thanks to what appears to be an upgrade of their profession. The job offers rewards in terms of enhanced job security and responsibilities, which are framed as positive outcomes. More specifically, some managers of DWCCs appreciate receiving a fixed monthly salary with regulated working hours and divided tasks. Furthermore, empowering waste pickers to become managers, also entails the advantage of increased power towards scrap dealers. Scams concerning the weighing of the categorized waste is less likely to happen, as the managers are the ones quantifying the waste. Other experiences of such managers reveal that their position does not necessarily reduce their workload and managing expenses for other laborers at the centre and for transport can become challenging. It is important to mention that not all waste managers earn a fixed salary. In a few cases managers of DWCCs still depend on the daily transactions they are able to make. Furthermore, some report earning just enough to make the ends meet for them and their team, after payments for the fuel for collection vehicles, or equipment such as waste bags. The repayment costs for the loans of the vehicles add to the costs of running the centre. A quote from Francis, a 36-year-old DWCC manager, who used to scavenge in the North of Bengaluru, expresses the hardship of making business out of waste:

“Yes, it is a business opportunity, but that doesn't make us happy. Let us work with you to make the city clean”.

(Waste picker Francis in Mint, 2012)

Nevertheless, he is confident that this type of business will grow and will take other waste pickers off the streets.

Box 3: Sweep smart

Sweep Smart is a private Indian-Dutch waste management company. The Dutch founders of the company came to India in 2017, studied the waste sector and started to connect with NGOs and the civic body in Bangalore. The company targets waste that comes both from households and companies. Its aim is to improve the quality and quantity of the waste segregation processes. Therefore, upgrading dry waste collection centres (DWCCs), sorting facilities, in particular in terms of improving their efficiency forms a large part of their work. Through a pilot project the company analysed the problems that DWCC workers were facing while sorting and found that working on the floor only allowed them to sort approximately only one third of the incoming waste (300-400kgs out of 800-1000kgs on a daily basis). The design of two types of smart equipment, the conveyor belt system and the bailor machine, tailored to their needs, helps to significantly increase the quantity of waste that can be segregated. The fact of compressing the collected waste, such as PET bottles through the bailor machine, creates a lot of storage space. This enables the operators (waste pickers) to sell baled waste, which increases their revenue. Furthermore, having a conveyor belt in the DWCC allows the waste pickers to work in a professional factory-like setting, compared to working in the middle of waste.

To optimise the use of the two machines, eight people would ideally be required in a standard DWCC. Ideally two workers are needed to operate the machines, for example to feed in the waste into the machine and the remaining workforce would conduct the sorting into 24 types of waste streams. The waste pickers that work for the DWCC operator receive trainings and check list on the maintenance and the use of the machines. The company also explains them the advantages of cleaning their working space and wearing personal protective equipment.

The BBMP has assigned Sweep Smart with the upgrade of 10 out of 164 operational DWCCs in Bengaluru. Finally, the set-up of Sweep Smart equipment increases the safety, the ergonomics and the revenue of the DWCC waste workers. With an increase of DWCCs in the city, employment opportunities are likely to multiply. Nevertheless, it also has to be considered that the slow bureaucracy of the civic body procedures may represent a possible barrier to these “upgraded” jobs.

7.3.3 Revenue streams

Waste pickers' form of employment, if any, determines their income and varies significantly between independent/free-roaming ones, those engaged by an NGO or by a private company. The review of media articles revealed that free-roaming waste pickers that sell waste to scrap dealers earn between

Rs (Indian Rupees) 30 and 200 per day¹⁷, which for most is barely sufficient for basic survival. Private contractors, on the other hand, may buy off the waste from them for only Rs 3/ kg, which means an average of 50kg of waste would need to be collected for a return of Rs 150. While these unorganised¹⁸ models mean that waste pickers are dependent on the amount of waste they collect, being engaged in an NGO generally translates to a fixed salary of Rs 300/day. When waste pickers organise themselves or are externally motivated to organise themselves in groups, different revenue models are used that lead to different revenue streams. Four modalities were identified¹⁹, as can be seen below.

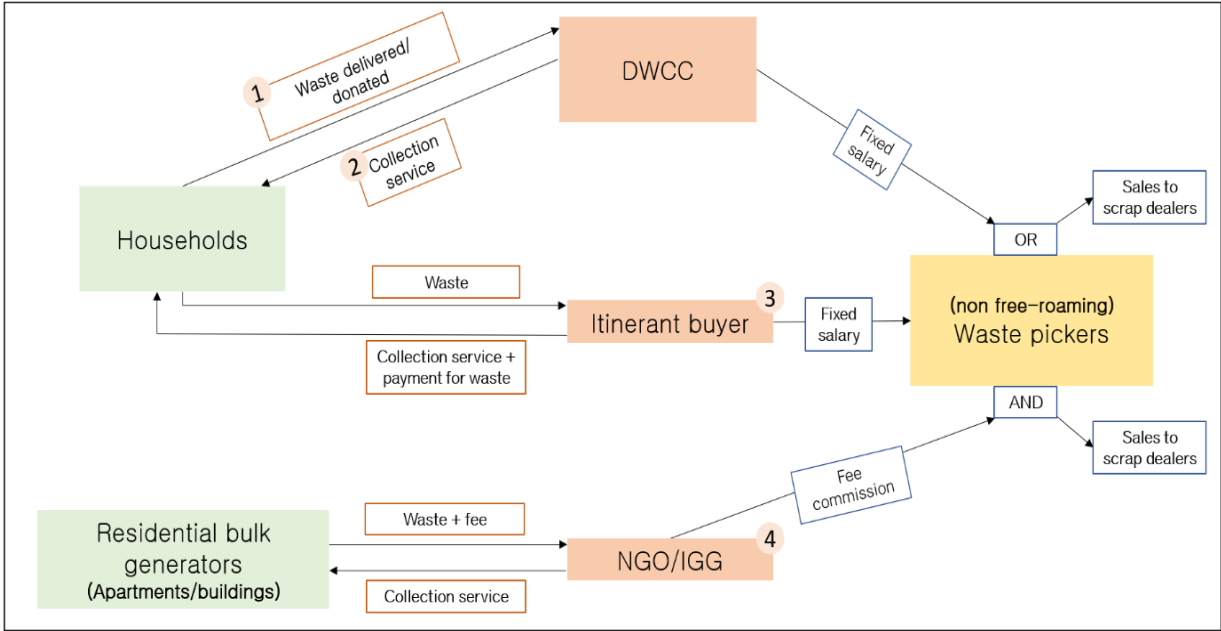


Figure 12: Identified revenue streams for non free-roaming waste pickers (Author’s own).²⁰

First, in what seems to be the rarest case, garbage is delivered to DWCCs by households or other type of customers, which saves the DWCC transport costs and efforts (Model 1 in figure 12). Second, workers of dry waste collection centres collect the dry waste from households or residences, thereby relying on proper source segregation in their locality (Model 2 in figure 12). Their revenue stems solely from the sales to scrap dealers or recycling companies. Although some follow the concept of “Donate dry waste”, others, so-called itinerant buyers, purchase dry waste from households in a particular ward (Model 3 in figure 12). The tariffs depend on the quality of the scrap material and on the price, they can be sold for. An example of this, is the work of a local waste management project, initiated by three

¹⁷ The minimum amount of money recommended for daily food expenses in Bengaluru is Rs 227.48. Retrieved June 14, 2021, from: <https://www.numbeo.com/food-prices/in/Bangalore>

¹⁸ Unorganised here refers to free roaming waste pickers that do not work for an organization or a group, hence are generally not recognised

¹⁹ It has to be noted that these are not exhaustive, as they are based on what is reported in the media. Other modalities might thus exist.

²⁰ The numbers refer to the four modalities described in the text above.

enterprising women, residents of a neighbourhood of Domlur, a residential ward in the East of Bengaluru city. Although households are paid for the service of waste collection, door-to-door collection requires that households agree that their waste gets picked up from their doors, which was found not to always be the case. For waste pickers this model allows the members involved in this small project to receive a salary of Rs 4.500-5.000 per month and is aiming to increase it to 10.000, in case more households join the program.

The question arises whether this system stimulates a responsible and sustainable behaviour among households, which is not addressed in the media. On one hand, earning money for segregating waste can incentivize households to segregate, on the other hand, it could also discourage a waste-reducing behaviour. On the contrary of this model, some NGOs engage waste pickers in a model where apartments are charged on a monthly basis for garbage collection (Model 4 in figure 12). The cloud-based technology “I got garbage” (IGG) connects waste pickers to city residents and charges the waste generators for collection services. The advantage for waste pickers is that they earn a part of the fee charged to households in addition to the income they get from selling recyclables. Box 4 illustrates how the for-profit organisation “I Got Garbage” contributes to shaping municipal waste policies and has set up an innovative approach to integrate waste pickers into the formal waste management sector.

Box 4: I Got Garbage

The journey of I Got Garbage started by working with NGOs and the local government on establishing the “right” policies, processes and also operational details of SWM in Bengaluru. The aim was to institute a supply chain strategy that is based on different types of waste streams, which required a change in operations, for instance different trucks for each waste stream. Ultimately the purpose was to educate citizens and bulk generators (any entity that generates 10 households worth of waste) on their obligations through new local notifications. This initial work on institutionalising policies and operational framework was done in combination with “branding” the waste picker as a recycling manager. It can be seen as preparation to set up “I Got Garbage”, a start-up initiative by Mindtree, an IT-service firm based in Bengaluru. The idea of the initiative was to leverage the IT company’s technology to create an open-source livelihood platform that enables waste pickers to become micro-entrepreneurs and improve their working conditions and earnings. This was done by connecting waste pickers mainly with bulk generators. Apartment complex or office buildings are particularly interesting for two reasons. First, segregation is more prominent than among households as waste is often managed by the building staff. Second, contrary to households, at this level, citizens are more willing to pay for a waste management service.

The company strives to rope in waste pickers encouraged to form groups of micro-entrepreneur units to collect the waste from the bulk generators, and sort recyclables in sorting centres. The amount of segregated waste a collection unit receives from one pick up is considerably higher than waste produced by single households.

The team leader of a collection unit, typically the driver, as well as the team leader of the sorting centre that receives the waste, ensure traceability of the waste through the use of a mobile phone. However, as waste pickers are not legally allowed to directly run these services, NGOs, mostly waste picker collectives, act as legal intermediaries between I Got Garbage and the waste pickers. The digital platform enables the NGOs to organise the pick-ups, capture related data on apartment contracts or income history of the waste picker. This data creates credibility and transparency towards the BBMP and facilitates formal processes like the receipt of a loan, ID cards and social security. The arrangements between the NGOs and waste pickers vary and depend on whether the waste picker has useful assets, such as a van or a mobile phone. Those without resources are more likely to work in a dry waste collection centre. Most of them have practiced sorting on the streets before working in a centre, which is why they do not need trainings. However, as in all professions, it was found that waste pickers also face competition, which can mean that they will need to fight for a certain position.

7.3.4 Chapter conclusions

The analysis of news items on waste pickers and their livelihoods has shown that numerous news items shed light on various ways waste pickers yield benefits from being organised as a professional workforce. Tying up to an association, working for a DWCC, or for a small enterprise is reported to have drastically changed the lives of those waste pickers. Joining a group, be it under the mandate of an NGO-BBMP agreement or under the technology-based “I got garbage” initiative, is said to lend their profession more dignity. These initiatives have in common the objective of including them into the multi-stakeholder SWM system and have advocated for their recognition, aiming to avoid disrespectful treatment.

Utterly without intending to downplay the efforts of citizens’ engagement, a few remarks require further attention. Of course, the agreement “Memorandum of Understanding” between the NGO and the municipality, which institutes the empowerment of existing waste pickers and access to waste, proves the remarkable advocating power of NGOs. However, the need for middle-class citizens to fight for the rights of waste pickers can also be claimed to reflect existing power plays between middle-class citizen and lower-ranked occupations. Furthermore, the question that arises is whether these initiatives begin to profoundly change the historically embedded mindset towards these people.

It has also to be noted that the abundance of individual success stories indicates that journalists might have selected certain stories of those waste pickers whose lives have been transformed by these initiatives. Of course, reporting individual success stories of empowered waste pickers can be seen as a sign of hope to the wide audience. They highlight citizens' concerns towards waste management and the livelihoods of waste pickers which led to their engagement in changing the status quo. However, it must not be overlooked that the privileged positions of journalists allow them to glorify the position of lower placed waste pickers. In addition, the numerous articles focusing on the positive outcomes of civic initiatives may divert from drawing attention to those waste pickers who are not part of civil initiatives and continue to suffer from precarious working and living conditions. It further diverts from discussing in-depth root causes that drive the poorest population into precarious occupation in the first place. With exception of a few authors that publicly acknowledge the prevailing oppression:

"It's time we look beyond our class and caste comforts, identify this structural pattern of oppression and support them in their fight."

(Swaminathan, 2016)

the absence of addressing marginalisation, the caste system or migration indicates the widespread neglect of these topics.

Regarding the collection of residential bulk waste, articles illustrate that, when implemented, it has largely contributed to upgraded working conditions, because waste pickers no longer have to scout mountains of garbage on the roads, crossroads or dumpsites. On the other side, door-to-door collection goes hand-in-hand with segregation and requires extensive campaigning and the agreement of households to segregate their waste.

Furthermore, it needs to be pointed out that the extent of decentralization and residential bulk waste collection arrangements have been mainly implemented by civil initiatives, but also depend on political decisions taken by the BBMP (see section 7.4).

7.4 The politics of a new waste system

Finally, it appears necessary to evaluate the authors' different perspectives towards the BBMP, which represents a major actor for the implementation of the SWM regulations and thus play a substantial role in affecting waste pickers' livelihoods. While some articles reflect disappointment towards the municipality for not taking the necessary systematic steps to resolve the garbage crisis, others honour the politics of a "new" waste system, without taking position. A range of articles refer to the municipality's announcement of a ward-level approach focused on segregation as "new". They accentuate the BBMP's recent plan to organise separated collection rounds for dry and wet waste.

Contrastingly, mixing dry and wet waste is outlined as a substantial issue, as it does not allow to neither compost the wet waste, nor recycle the dry waste and simply translates to growing piles of landfill. Some journalists link the mixing of waste to the involvement of private garbage contractors, who are paid according to the amount of waste transported. Thus, their only interest of transporting waste to landfill eradicates all efforts made by citizens to segregate waste. This criticism comes mainly from

environmental activists, who are concerned about the mismatch between private contracts which primarily focus on collection and transportation and the current policies which promotes segregation into three types of waste. The BBMP is criticised for engaging private actors in waste management, said to increase corruption and chaos. The discussion about the private sector seems to diminish in the mid-2010s, as the articles addressing the politics of waste management tend to focus more on the “new” plans of the BBMP, centred around segregation at source. Some articles thus present segregation at source and the separate collection of dry and wet waste as a promising plan. However, citizens’ concerns regarding different collection timings at houses are also revealed through the analysis. The BBMP’s intention to impose higher penalties to waste generators not respecting segregation has been reported in very recent news items and has received criticism, for instance by hoteliers.

For waste pickers, potential consequences of this plan are not discussed in the media. It is envisaged that a network of waste pickers is set up in each ward which would be responsible for dry waste collection. Even though this might entitle them to direct access to dry waste and enable them to sell larger volumes, one needs to consider that this scheme can lead to new forms of exclusion amongst waste pickers, for instance by leaving out the more vulnerable ones.

While some view the municipality’s plans as promising, others appear more sceptical pointing out that “segregation is the exception, rather than the norm”, caused by a “lack of political will” (Tiwari, 2021). This scepticism towards the local authority might derive from its contradicting actions portrayed in different news items. For example, the diversion of Swachh Bharat Abhiyan funds reserved for Solid Waste Management and public toilets to other uses, such as construction has seen fierce criticism from the civil community. Furthermore, the BBMP has initiated waste education programs for children, with the aim to raise awareness on segregation. One journalist points to officials’ paradox behaviour promoting recycling at “green” events, while at the same time not providing any garbage infrastructure.

As of today, discussions are taking place on the new state's decision to form a separate entity focused only on SWM. This body would be held 51% by the BBMP and 49% by the government. The plan of shifting the responsibility of door-to-door collection, secondary collection and transportation to waste management plants from the BBMP to the entity faces high level of controversy. While BBMP officials and some environmentalists state that the formation of a separate body would result in faster implementation and better financial management, SWM experts fear that the high bureaucracy is likely to prevail (The Hindu, 2021; Mandyam, 2020). Pourakarmikas and street sweeping would remain responsibilities of the civic body (The Hindu, 2021). A smooth coordination between the two agencies, namely the new entity, Bengaluru Solid Waste Management Limited (BSWML), and the BBMP is therefore a concern to some. Furthermore, NGO founder Hasiru Dala stresses that management at the ward level should not be neglected in case of the creation of the new company (Reddy, 2021).

8. Discussion of the results

The findings show that waste pickers, are part of a highly complex and fast-changing waste management system, which affects their livelihood in various ways. The complexity can be associated to the increasing interaction between the formal actors, namely mainly the BBMP and civil society organisations. The latter act as a crucial intermediary between the municipality and waste pickers. This intermediary position is criticised by a few scholars, claiming that it places too much focus on structurally organising waste pickers, rather than on their access to waste (Anantharaman, 2019). The findings of this research align to the scholarship that emphasises the importance of non-governmental support, acting as an interest agency that connects waste pickers to solid waste institutions, supplementing them with crucial resources (Velis et al., 2012). However, the findings also reveal some drawbacks of the dominant intermediate position, especially the way it is framed in the legal framework, which is discussed later in this section.

For the case of Bengaluru, it can be stated that despite having different focuses, overall, the non-governmental interventions that were included in this study demonstrated their priority on cooperating with waste pickers. Organising plays a huge role, however, it appears to be a means towards the end-goal of improving the livelihoods of waste pickers. The classification in seven categories of interventions to integrate informal recyclers by Scheinberg & Savain (2015) is difficult to apply to organisations in Bengaluru, as one organisation was found to interact in multiple fields of intervention. Nevertheless, it can be noted that based on this classification, the welfare-, rights-based and professionalisation type are the most dominant forms of intervention. Welfare- and rights-based work is strongly centred around social inclusion. More specifically, the fact that the ensemble of non-governmental organisations successfully advocated for the recognition of waste pickers and for a streamlined waste management, provides evidence of their proactive role. They can thus be seen as a crucial political actor. Their advocacy work was proven necessary in the fight for waste pickers' societal recognition. Particularly official documentation, mainly occupational recognition and ID cards are vital for waste pickers to get access to social security and health benefit schemes. Support with the proof of required documentation and with application to certain schemes available to the poor, which waste pickers might not be aware of, is viewed as significant, as many waste pickers are illiterate.

Besides physical hardships tied to the occupation of waste picking, the precarity of waste pickers was found to be exacerbated by police harassment, suspicion, exploitation, violence, which result from a fundamental lack of recognition by a large part of society. The underlying reasons for this widespread disrespect and neglect are associated to socio-cultural patterns that are sparsely discussed in the media. The perception of the occupation as being unhygienic and dirty was found to relate to the mentioned lack of recognition. Furthermore, illiteracy and the lack of local language (for migrants) reinforced the public's perception of their weaker position, which is often taken advantage of.

These common hardships were partly reported to have been reduced after processes that enhance professionalism visible to the public (uniforms, group formations, ID cards). In fact, professionalisation appears to be a major goal for some organisations, that view waste pickers as micro entrepreneurs.

Facilitating access to resources, such as vehicles and providing vocational trainings, are major empowerment strategies used by NGOs. This has enabled some waste pickers to upgrade their work by moving from picking waste on the streets to working in a professional environment. Their two main upgraded opportunities were found to be in collection centres (DWCCs) and collecting waste from apartment complexes. The empowerment of waste pickers as professionals or entrepreneurs was also identified by the global network Wiego (Women in Informal Employment: Globalizing and Organizing) as key for changing their status from social victims to professional workers (Velis et al., 2012). However, the professionalisation of waste pickers faces two problems: First, it is disputed whether there are sufficient “upgraded” opportunities for all waste pickers in the city. Second, although it was found that such opportunities increase their recognition and guarantee safer working conditions, not all want to be professionalised. The main reason for this is their independence and flexibility of not having fixed working hours. Particularly women benefit from such flexibility, enabling them to combine their job with other household obligations, such as cooking or taking children to school.

With regards to the policy framework, the release of the MoEFCC’s Solid Waste Management Rules in 2016 was found to be a turning point in the Indian policy framework. These rules for the first time openly recognise the work of waste pickers by including their definition, welfare measures and prescribe duties to different waste generators in relation to waste pickers. However, the degree of “inclusive” dialogue in national level documents was found to deeply differ from other policies. One major difference can be observed between the MoEFCC’s SWM regulation and the CPHEEOs’ (under the MoHUA) national SWM manual, both addressing urban local bodies. Being published in the same year, their inconsistency comes even more as a surprise. The CPHEEO manual emphasises and provides extensive guidance on waste technologies for composting and waste-to energy facilities. However, advice on making the waste management system more inclusive is limited to “integrating waste pickers”, without going into the details of their source of income or ensuring their access to waste. The only policy that explicitly perceives waste as a source of livelihood is the SBM-NULM guidelines on empowerment of the marginalised. Lastly, the Plastic Waste Management rules also stand in contrast to the SWM rules. The policy barely mentions waste pickers, although plastics are a main source of livelihoods for many waste pickers.

A further problem identified relating to the legal framework, suggests an indirect lack of access to waste for waste pickers as individuals. According to state and municipal by-laws, only so-called “empanelled vendors” or “agency or service providers” are authorised to access waste from waste generators. Individual waste pickers do not fall under neither of these categories. This means that they are only entitled to access waste and thus earn a livelihood from it in the case they are members of a legal organisation or contractor that has a formal agreement with the municipality. Although the SWM rules 2016 can be seen as the first legal rule that recognises the existence of waste pickers, the lack of direct authorisation to them to access and retrieve income from selling waste materials, is found to be a major flaw. The fact that membership organisations and other NGOs act as legal intermediary needed for facilitating upgraded job arrangements or applications for welfare schemes, illustrates that waste pickers to some extent still lack fundamental rights.

Furthermore, the policy of the “empanelled vendor” leaves space to anybody wanting to carry out waste management services for the municipality and become an empanelled vendor. Any company (especially capital-intensive ones) can come into the scene and take over recycling activities. The local bye-laws mandate to leave the operation of decentralised waste facilities (such as DWCCs) to waste pickers is thus a fundamental step in policy which typically prevents the livelihoods of these waste pickers to be threatened by other, more powerful actors. This is a progressive example of the way waste policies can more clearly specify the protection of waste pickers’ livelihood.

Concerning the segregation of waste at source, the SWM rules and the bye-laws have framed this as a critical issue, mandatory for all waste generators. Complementary to the municipality’s legal advancements, civil society organisations and proactive citizens in their districts have made it their vocation to spread awareness on the importance of segregating and explaining the consequences of mixing all solid waste. For welfare- and rights-based organisations the purpose of advocating for segregation was also to allow waste pickers to “move away” from highly unhygienic sorting. Advocating for a responsible behaviour amongst waste generators would thus translate in upgraded management and collection work, rather than being confined to sorting activities without adequate space and protection. Furthermore, access to segregated waste automatically leads to higher revenues through the availability of higher quantities of recyclable waste.

With regards to the livelihood capitals of waste pickers, the results found a low level of all five capitals (see section 2.3), particularly before any type of involvement in a member-based organisation. This is illustrated by their restricted access to land (natural capital), forcing them to live in slums or on rental property making them dependent on a private landowner (physical capital). The financial, social and human capitals of waste pickers were found to expand when involved in a non-governmental organisation or initiative. Evidence shows that these initiatives facilitate their access to loans or increases their revenue through professionalised job opportunities. Furthermore, their social relations with other waste pickers is enhanced through the network of members (such as Hasiru Dala), as they are encouraged to form groups. Finally, non-governmental actors enlarge their set of skills (human capital) beyond sorting materials, to enable them to undertake different activities taking into consideration their individual preferences and constraints.

It has also been found that the type of waste picker has an influence on their ability to access capitals and improve their livelihood outcomes. For instance, in contrast to local waste pickers, migrant waste pickers were found to be most often subject to brutality, discrimination by locals and poor living conditions. Their day-to-day discrimination is reinforced by laws that complicate their entitlement to official documentation and social security benefits. A further example relates to the physical capital of waste pickers. Those possessing a second-hand truck, a van, a driving licence or a smartphone were found to be more likely to establish a business unit.

When it comes to defining and categorising waste pickers, this research places importance on differentiating between the various types of waste pickers and understanding their individual needs, rather than viewing them as a homogeneous group. Scholars have defined waste pickers as self-employed (Madhav, 2010). This was found to be true only to a certain extent, as it appears that more and more

individuals engage in work for a micro-entrepreneur (in a collection centre) or collect waste from residential bulk generators, for which they receive a fixed salary in some cases. The research also showed that flexible income arrangements with NGOs are emerging, where waste pickers either earn a fixed salary or they (fully or partly) remain dependent on the valuables sold to scrap dealers (see figure 12, section 7.3.3). For the latter, being organised in small groups and aggregating the waste was found to increase their sales revenues.

9. Conclusion and recommendations

The policy and media analysis have shown that local non-governmental organisations have taken the lead in the governance of SWM in Bengaluru. Their work has proven indispensable for the improvement of existing waste pickers' livelihoods. Their engagement in advocacy work and their intermediate position has led to a political and societal discussion about waste pickers' recognition and inclusive work modalities. The representation of waste pickers by middle-class citizens has proven necessary to ensure credibility among the government and consequently resulted in the creation of enhanced livelihood strategies for the involved waste pickers. Furthermore, entrusting waste picker organisations with the decentralised operations of recyclable waste is a critical first step towards an inclusive solid waste management policy. In order to create more inclusive work opportunities for waste pickers, following recommendations emerge:

Legally, waste pickers are not recognised as the municipality's service providers, as long as they are not represented by an NGO. Thus, the need for representation of middle-class citizen demonstrates the persisting power play between middle-class citizens and low-class-ranked occupation. Policies should encourage the establishment of a strong cooperative led by waste pickers themselves, which is likely to increase their political and operational might. This can encourage their participation in policy-making of waste management and also protect them from other potential contractors that might win contracts and threaten their livelihood. A further consequence of the formation of a cooperation recognised by the municipality means that waste pickers' rights as occur in the SWM law and related policies would no longer have to be based on whether they are "authorised" or "informal". On the practical side, a cooperative would allow waste pickers to exchange information on welfare programs and practical matters, such as documentation needed for registration. A committee of waste workers' representatives would allow their interests to be represented on a regular basis and their common challenges to be expressed democratically. This would also reduce their dependency on NGOs for upgrading their livelihood in the long term.

The current discourse about the establishment of a new entity responsible for SWM has not incorporated its impact on waste pickers. Setting up a company half owned by the municipality and half owned by the government could provide SWM with more financial resources but can also be expected to result in the reorganisation of responsibilities. Therefore, it is crucial that the current progress achieved by non-governmental organisations is not made redundant. It is recommended that existing arrangements between the BBMP and the NGOs persist. Furthermore, a discussion on how to increase the decentralisation and inclusiveness of SWM would seem more appropriate.

Contractual arrangements with individual establishments, such as residential bulk generators who pay a collective fee for waste collection services, have resulted in a successful work modality for waste pickers. The waste pickers' waste management services for residential bulk generators, can be seen as an exemplary case where waste pickers' services are valued, instead of being disrespected or neglected. Similarly to the specialisation on residential bulk generators, waste pickers' collectives that specialise on specific sectors, such as the collection of waste generated at large events can be a viable

source of income in the future. Given waste pickers' knowledge on collection centres and scrap dealers and the reduced burden of the municipality, it is also in the local authority's interest to promote such arrangements. Contracting the private sector has shown no positive outcomes, nor for waste pickers, neither for the hygiene of the city, increasing landfill and exacerbating the precarity of waste pickers' livelihoods. Thus, in the future, arrangements should be based on the preference for waste pickers for the collection activities from commercial institutions, which could increase upgraded occupation opportunities for existing waste pickers. In this regard, the local government is advised to entrust waste picker units with the collection and the sorting of recyclables generated by commercial establishments, such as hotels or event companies. These types of arrangements also necessitate the readiness of citizens to cooperate with waste pickers which might be hindered by deeper socio-cultural inequalities. Nevertheless, it can be stated that raising awareness on the vital role of waste pickers through data collection and public education have proven substantial to overcome discrimination.

Bengaluru can be seen as an illustrative case where waste pickers' livelihood strategies have multiplied in the past decade. Waste pickers that are becoming recycling managers or join a business unit benefit from improvements in livelihood outcomes. Despite challenges related to high workloads and managing expenses, improvements are associated to a professional work environment, increased job security and in some cases higher and regular revenues. Various income streams exist, and their working conditions are likely to become more professionalised, as this sector becomes more and more organised. Nevertheless, attention needs to be drawn to the fact that citizen initiatives as framed by the media might divert from discussions on the persisting precarity in the waste sector. It is important to note that the discussion on the improvement of waste pickers' livelihoods when organising and engaging in formal arrangements, does not apply to all waste pickers. Challenges for free-roaming waste pickers might take new dimensions. Increased public awareness about the waste problem, and the call to segregation along with higher fines for littering on the streets, is likely to result in less waste left on the streets in the future. Reduced amounts of waste in the streets means that new migrants coming to the city (for example as a result of climate change) might not be able to make a living from waste picking. Moreover, as the efficiency of the waste management system increases, it will thus become more and more difficult for those waste pickers who have not decided or have not been able to "professionalise", to gain a livelihood from waste.

The question that remains to be asked is whether the professionalisation of waste pickers will create a steep divide between workers and enhanced competition in what can be called a semi-formal sector. Those with lesser social relations or time constraints might be excluded from "upgraded" employment opportunities and might be forced out of the waste sector, leading to a loss of their livelihood. A more considerable gap between waste pickers who take on manager or more recognised positions and those who continue to work in miserable conditions is likely to create new exclusionary patterns.

Lastly, it can be stated that the extent of precarity of waste pickers depends on inclusive policies that allocate concrete responsibilities to waste pickers. Moreover, the degree of their active and direct participation in policy-making is decisive. It is crucial that the municipality involves them in future outsourcing decisions and leverages waste pickers' skills and knowledge on the waste materials and the

recycling market. The local governments' SWM officials should collaborate with waste pickers' representatives to identify employment opportunities that also go beyond dealing with recyclables, in view of contributing to the achievement of a cleaner city. With increasing segregation and higher amounts of compost waste, waste pickers could be involved in the collection, transportation of compost and in the operations of composting plants. Furthermore, they could hold workshops about waste segregation or composting at schools. In the short term, NGOs as intermediary agents will likely continue to be needed for welfare- and rights- issues. For instance, for making financial support accessible to entrepreneurial groups for the rent or acquisition of transportation vehicles. Further research is needed to examine whether the political and social acceptance of a strong cooperative of waste pickers is likely to be hindered by deep-rooted socio-economic inequalities. Lastly, changes in the way the wider public perceives and recognises waste pickers after professionalisation requires more attention.

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Appendix A: Extra sources

Appendix A1: Extra sources for the material-specific waste-related rules

Rules	Source
Plastic Waste management rules 2016	Available on the Official Website of the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change. https://cpcb.nic.in/displaypdf.php?id=cGxhc3RpY3dhc3RlL1BXTV9HYXpld-HRlLnBkZg==
E-waste (management) rules, 2016	Available on the Official Website of the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change. https://cpcb.nic.in/display-pdf.php?id=RS1XYXNOZS9FLVdhc3RITV9SdWxlc18yMDE2LnBkZg==
Bio-medical waste management rules, 2016	Available on the Official Website of the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change. https://dhr.gov.in/sites/default/files/Bio-medical_Waste_Management_Rules_2016.pdf
Hazardous and other wastes (management & trans-boundary movement) rules, 2016	Available on the Official Website of the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change. https://cpcb.nic.in/displaypdf.php?id=aHdtZC9lV01fUn-VsZXNfMjAxNi5wZGY=
Construction and demolition waste management rules, 2016	Available on the Official Website of the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change. https://cpcb.nic.in/display-pdf.php?id=d2FzdGUvQyZEX3J1bGVzXzlwMTYucGRm

Appendix A2: Sources of news articles used for the media analysis

Number	Title	Newspaper source	Author	Date of publication	Source
1	Waste pickers taught to lead a better life	DNA India (daily news and analysis)	Reddy Maheswara	18.06.2014	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
2	Fixing Bengaluru's waste management: Beyond activism	Deccan Herald	Divya Tiwari	01.01.2021	https://www.deccanherald.com/specials/point-blank/fixing-bengaluru-waste-management-issues-beyond-activism-934212.html
3	New way to dispose waste, but only for 38 lucky wards	Bangalore Mirror; Indiatimes	Naveen Menezes	14.09.2020	https://bangaloremirror.indiatimes.com/bangalore/others/new-way-to-dispose-waste-but-only-for-38-lucky-wards/articleshow/78095075.cms#:~:text=Only%2038%20wards%20of%20Bruhat,wet%20and%20dry%20waste%20separately
4	Neo-liberalising inclusion? Waste picking, Data activism and the state	Economic & political weekly/Mumbai		30.11.2019	https://www.epw.in/journal/2019/47/review-urban-affairs/neo-liberalising-inclusion.html
5	A day in the life of a Pourakarmika	Feminisminindia	Mira Swaminathan	17.05.2016	https://feminisminindia.com/2016/05/17/a-day-in-the-life-of-a-pourakarmika/
6	With meagre pay and unhealthy conditions, why do Bengaluru pourakarmikas continue in their jobs?	Citizen matters-Bengaluru	Krupa Sriram	26.02.2019	https://bengaluru.citizenmatters.in/bengaluru-pourakarmika-research-salaries-conditions-hygiene-33349
7	Waste pickers help out BBMP	Times of India	Aparajita Ray	28.08.2012	https://timesofindia.indiatimes.com/city/bengaluru/waste-pickers-help-out-bbmp/articleshow/15852120.cms
8	Why ragpickers, unrecognised and unpaid are critical for waste management in India	Indiaspend	Bose and Bhattachanya	12.05.2017	https://www.indiaspend.com/why-ragpickers-unrecognised-and-unpaid-are-critical-for-waste-management-in-india-43164#:~:text=Challenge%3A%20Health%20%26%20Sanitation,Why%20Ragpickers%2C%20Unrecognised%20And%20Unpaid%2C%20Are%20Critical,For%20Waste%20Management%20In%20India&text=Ragpickers%20sustain%20themselves%20by%20collecting,waste%20generated%20annually%20in%20India.
9	Not paid for 6 months	Times of India	-	26.11.2020	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
10	Bangalore Bhath - A life less wasted	MINT	-	07.12.2012	https://www.livemint.com/Leisure/zyTr3bHEPXwB2XI0L7yHRJ/Bangalore-Bhath--A-life-less-wasted.html

11	Prashant Mehra's igotgarbage.com brings cloud-based technology for waste disposal in Bangalore	MINT	Indu Nandakumar	18.06.2014	https://economictimes.indiatimes.com/tech/internet/prashant-mehras-igotgarbage-com-brings-cloud-based-technology-for-waste-disposal-in-bangalore/articleshow/36734645.cms
12	Got waste? Take it online and help empower a waste picker	New Indian Express	-	18.06.2014	https://www.newindianexpress.com/cities/bengaluru/2014/jun/18/Got-Waste-Take-it-Online-and-Help-Empower-a-Waste-Picker-625942.html
13	Include rag pickers in Solid Waste Management programme: AIW	UNI (United News of India)	-	19.06.2010	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
14	47-year old is proud to be a waste picker	Times of India	Sunitha Rao R	09.08.2011	https://timesofindia.indiatimes.com/city/bengaluru/47-yr-old-proud-waste-picker-of-bangalore/articleshow/9536470.cms
15	Making an enterprise out of picking waste	Times of India	Seram Rabina Dewi	13.11.2012	https://timesofindia.indiatimes.com/city/bengaluru/making-an-enterprise-out-of-picking-waste/articleshow/17188034.cms
16	30 new centres to help store Bengaluru's dry waste	Bangalore Mirror	Naveen Menezes	08.03.2021	https://bangaloremirror.indiatimes.com/bangalore/civic/30-new-centres-to-help-store-bengalurus-dry-waste/articleshow/81372336.cms
17	Minister's daughter to set "zero-waste example at own wedding reception day	Bangalore Mirror	-	27.11.2015	https://bangaloremirror.indiatimes.com/bangalore/others/ministers-daughter-to-set-zero-waste-example-at-own-wedding-reception-today/articleshow/49926495.cms
18	Pinch of marchal law	Bangalore Mirror	Naveen Menezes	28.10.2020	https://bangaloremirror.indiatimes.com/bangalore/others/pinch-of-marshal-law/articleshow/78882457.cms
19	One scientific landfill is enough in Bangalore	DNA	Anjana Iyer	18.11.2010	https://www.dnaindia.com/bangalore/report-one-scientific-landfill-is-enough-in-bangalore-1468387
20	Identify 3 sites for garbage disposal: HC to govt	DNA	DNA correspondent	07.11.2012	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
21	BBMP gives 200 ragpickers an identity to be proud of	DNA	Anantha Subramanyam	10.08.2011	https://www.dnaindia.com/bangalore/report-bbmp-gives-200-ragpickers-an-identity-to-be-proud-of-1574511
22	Moving toward lesser garbage on city streets; Nobody said it was easy. But the silver lining to all this mess is that Bangalore will finally set up a system of solid waste management; something that should have been done at least nine years ago	DNA	Merlin Francis	15.12.2012	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
23	Ragpickers day out; a rare day of fun for those who	DNA	DNA correspondent	03.07.2013	https://www.dnaindia.com/bangalore/report-ragpickers-day-out-1856438

	dispose of the trash we generate				
24	Police force to quell resistance	DNA	DNA correspondent	24.08.2012	https://www.dnaindia.com/bangalore/report-police-force-to-quell-resistance-1732086
25	Swach Bharat @ 2: How proactive citizens are doing their bit to change the way India handles its trash	The economic times (India)	Malini Goyal	26.09.2016	https://m.economictimes.com/small-biz/startups/swachbharat2-how-proactive-citizens-are-doing-their-bit-to-change-the-way-india-handles-its-trash/articleshow/54502443.cms
26	Bengaluru turning into a “garbage city” again	Bangalore Mirror	Akhila Damodar	11.07.2019	https://bangaloremirror.indiatimes.com/bangalore/civic/bengaluru-turning-into-a-garbage-city-again/articleshow/69717294.cms
27	Modi’s clean India mission marred by Palike’s dirty trick	Bangalore Mirror	Maheswara Reddy	03.08.2018	https://bangaloremirror.indiatimes.com/bangalore/cover-story/modis-clean-india-mission-marred-by-palikes-dirty-trick/articleshow/65235827.cms
28	Collection centers divert 2.3k tonnes in 7 months	Bangalore Mirror	Mihika Basu	05.11.2016	https://bangaloremirror.indiatimes.com/bangalore/others/collection-centres-divert-2-3k-tonnes-in-7-months/articleshow/55233682.cms#:~:text=A%20seven%2Dmonth%20observation%20of,group%20called%20Solid%20Waste%20Management
29	Waste pickers gives tips to end city’s woes	Times of India	-	11.12.2015	https://timesofindia.indiatimes.com/city/bengaluru/waste-pickers-gives-tips-to-end-citys-woes/articleshow/50131222.cms?frmap=yes&from=mdr
30	Meet the waste planners who are making your parties more planet-friendly	Times of India	Sonam Joshi	23.06.2019	https://timesofindia.indiatimes.com/home/sunday-times/meet-the-waste-planners-who-are-making-your-parties-more-planet-friendly/articleshow/69908457.cms
31	BBMP marshals teach govt school children how to segregate waste	Times of India	Nithya Mandyam	23.02.2020	https://timesofindia.indiatimes.com/city/bengaluru/bbmp-marshals-teach-govt-school-children-how-to-segregate-waste/articleshow/74262602.cms
32	BBMP demolishes around 400 houses in Bellandur	Times of India	-	19.08.2018	https://timesofindia.indiatimes.com/city/bengaluru/bbmp-demolishes-around-400-houses-in-bellandur/articleshow/65457225.cms
33	Basavanagudi shows the way for rest of the city	The Hindu	-	13.01.2016	https://www.thehindu.com/news/cities/bangalore/Basavanagudi-shows-the-way-for-rest-of-the-city/article13996047.ece
34	Rectify flaws in SWM rules: Hasiru Dala	The Hindu	-	02.05.2016	https://www.thehindu.com/news/cities/bangalore/rectify-flaws-in-swm-rules-hasiru-dala/article8545847.ece

35	City will soon have its first woman garbage truck driver	The Hindu	-	21.01.2016	https://www.thehindu.com/news/cities/bangalore/City-will-soon-have-its-first-woman-garbage-truck-driver/article14011820.ece
36	Cleaning the city, living a life of pity	DNA	Deepthi MR	06.11.2012	https://www.dnaindia.com/bangalore/report-cleaning-bangalore-living-a-life-of-pity-1760937
37	A murder in Munnekola	MINT	Rahul Chandran	23.09.2017	https://www.livemint.com/Sundayapp/LEzVFrWnmmQJJKYpeXJLN/A-murder-in-Munekola.html
38	Rag pickers are now waste managers in Domlur	Times of India	Sunitha Rao R	15.09.2012	https://timesofindia.indiatimes.com/city/bengaluru/rag-pickers-are-now-waste-managers-in-domlur/articleshow/16390994.cms
39	Mynamar origin rag picker murdered in Bengaluru	Times of India	Merlin Francis	24.10.2015	https://timesofindia.indiatimes.com/city/bengaluru/mynamar-origin-rag-picker-murdered-in-bengaluru/articleshow/49501864.cms
40	Rag picker run over	Times of India	-	25.04.2013	https://timesofindia.indiatimes.com/city/bengaluru/rag-picker-run-over/articleshow/19716629.cms
41	Rag pickers get ID cards, and recognition as a workforce	Times of India	Christin Mathew Philip	18.07.2015	https://timesofindia.indiatimes.com/city/chennai/rag-pickers-get-id-cards-and-recognition-as-a-workforce/articleshow/48119131.cms#:~:text=The%20civic%20bodies%20in%20Pune,going%20to%20the%20dumping%20grounds
42	One more try: Palike starts waste segregation drive in Bangalore South	Times of India	Sunitha Rao R	02.07.2013	https://timesofindia.indiatimes.com/city/bengaluru/one-more-try-palike-starts-waste-segregation-drive-in-bangalore-south/articleshow/20868381.cms
43	The zero-waste restaurant on Sampige Road	Times of India	-	20.08.2017	https://timesofindia.indiatimes.com/city/bengaluru/the-zero-waste-restaurant-on-sampige-road/articleshow/60251991.cms
44	They pick waste not just for money, but environment too	Times of India	Merlin Francis	07.12.2015	https://timesofindia.indiatimes.com/city/bengaluru/they-pick-waste-not-just-for-money-but-environment-too/articleshow/50060742.cms
45	She clears mess that we create recklessly	Times of India	Rohith BR	30.12.2014	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
46	Rag picker smashed to death	Times of India	-	12.06.2012	https://timesofindia.indiatimes.com/city/bengaluru/rag-picker-smashed-to-death/articleshow/8818416.cms
47	Dogs maul 4-year old rag picker	Times of India	-	10.01.2012	https://timesofindia.indiatimes.com/city/bengaluru/dogs-maul-4-year-old-rag-picker/articleshow/11419702.cms

48	Government may make waste management a part of school curriculum	Times of India	Vishwa Mohan	02.05.2015	https://timesofindia.indiatimes.com/home/education/news/government-may-make-waste-management-a-part-of-school-curriculum/articleshow/47123838.cms
50	Rag pickers murder security guard just for Rs6200	Times of India	Rajv Kalkod	30.10.2013	https://timesofindia.indiatimes.com/city/bengaluru/rag-pickers-murder-security-guard-just-for-rs-6200/articleshow/24884284.cms
51	Clean Bengaluru plan: Segregate waste or pay hefty penalties from September 1	Times of India	-	06.07.2019	https://timesofindia.indiatimes.com/city/bengaluru/clean-bengaluru-plan-segregate-waste-or-pay-hefty-penalties-from-september-1/articleshow/70081044.cms
52	Ragpicker to environmentalist: Garbage's elevating tale	Times of India	Saswati Mukherjee B	28.04.2014	https://timesofindia.indiatimes.com/city/bengaluru/ragpicker-to-environmentalist-garbage-elevating-tale/articleshow/34304600.cms
53	Bio-matter as forensic lead takes cops to ragpicker - killer	Times of India	Arun Dev	17.05.2017	https://timesofindia.indiatimes.com/city/bengaluru/ragpicker-to-environmentalist-garbage-elevating-tale/articleshow/34304600.cms
54	Spread of mobiles not enough for women empowerment	Times of India	Chethan Kumar	26.10.2015	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
55	Karnataka: Eco-friendly recycled plastic house project launched in Mangaluru	Times of India	Vinobha KT	11.11.2020	https://timesofindia.indiatimes.com/city/mangaluru/karnataka-eco-friendly-recycled-plastic-house-project-launched-in-mangaluru/articleshow/79149186.cms
56	Cleanliness comes in new form for rag pickers	New Indian Express	-	20.09.2011	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
57	Rag pickers bin misery, bag a better life	The telegraph (India)	Animesh Bisosee	25.04.2017	https://www.telegraphindia.com/jharkhand/rag-pickers-bin-misery-bag-a-better-life/cid/1350935
58	App lends dignity to waste collection	New Indian Express	-	07.04.2016	https://www.newindianexpress.com/cities/bengaluru/2016/apr/07/App-Lends-Dignity-to-Waste-Collection-921194.html
59	From rags to riches	Bangalore Mirror	Naveen Menezes	23.09.2020	https://bangaloremirror.indiatimes.com/bangalore/cover-story/from-rags-to-riches-with-your-dry-waste/articleshow/78264168.cms
60	Meet the unsung heroes of waste	Yourstory.in	Anant Tiwari	08.06.2018	https://yourstory.com/2018/06/rag-picker-women-unsung-heroes/amp

	management – rag picker women				
61	The invisible green workers	Hard news	Pinky Chandran; Kabir Arora, Nalini Shekar	16.10.2014	No direct link available. Accessed from Nexis Uni (Utrecht University Library).
62	How this waste management company addresses challenges in the sector by making entrepreneurs of waste pickers	Yourstory.in	Monica Jain; Tanuka Muherjee	15.03.2019	https://yourstory.com/socialstory/2019/03/hasiru-dala-innovations-waste-pickers-entrepreneurs-bmatxxvdbf/amp
63	Board to death	Bangalore Mirror	Reddy M.	25.03.2021	https://bangaloremirror.indiatimes.com/bangalore/civic/board-to-death/articleshow/81674547.cms
64	BBMP, SWM experts differ on usefulness of SPV	The Hindu	-	05.03.2021	https://www.thehindu.com/news/cities/bangalore/bbmp-swm-experts-differ-on-usefulness-of-spv/article33990999.ece
65	Bengaluru: BBMP to set up separate entity for waste management	Times of India	Mandyam N.	15.12.2020	https://timesofindia.indiatimes.com/city/bengaluru/bbmp-to-set-up-separate-entity-for-waste-mgmt/articleshow/79728122.cms

Appendix B: List of interviewees

Participants	Organisation	Function	Date of interview
1	Hasiru Dala Innovation	Business Manager	April 16, 2021
2	Saahas	Project coordinator, Bengaluru	April 16, 2021
3	I Got Garbage	Co-Founder	May 17, 2021
4	Sweept Smart	Project Manager	June 16, 2021
5	Hasiru Dala	Co-Founder & Executive Director	June 24, 2021

Appendix C: Interview guide for NGOs and waste management company

Introduction

1. Thank you for participation and time
2. Permission for recording and anonymity?
3. Explain the objective of the research
4. Could you introduce yourself and your position in the organization?

Working conditions

5. What are the biggest challenges that waste pickers face in their day-to-day work?
6. Through what mechanisms do you (as an NGO) provide waste pickers with more dignified working conditions?

Welfare measures and ID cards

7. Are the welfare measures stipulated in Karnataka and Bengaluru Bye-laws implemented?
8. Are the trainings provided? If yes, on what do trainings focus on?
9. Are the protective gear provided?
10. How easy/difficult is it for waste pickers to get ID cards? How are those who do not have any, hindered?

Coordination/co-production

11. What arrangements do you have with waste pickers?
12. What is the contribution of your interventions?
13. Does (how does) the municipality partner with waste pickers and their organizations? Do they receive positive support (in view of livelihood)?
14. What measures is the government taking to encourage cooperation between local authorities and NGOs?

Empowerment

15. How do waste pickers come to join more formalized jobs? (On which resources does this depend?)
16. What is needed for more empowerment of waste workers?

Decentralization

17. Does your organization receive help/funding/support from the BBMP for setting up dry waste collection centers?
18. How does the collaboration with regards to the DWCCs work?
19. What are the complications and advantages of a more decentralized approach?

Segregation and door-to-door collection

20. How does segregation improve the daily lives of waste pickers? “If waste is segregated garbage collectors and scrap dealers can sort them easily and earn their daily bread” (DNA)
21. Does the current system with responsibility shared between the private sector (for wet waste) and NGOs (for dry waste) work well?

Responsibility of BBMP

22. Does the BBMP work on creating awareness? Is there sustained campaigning or centers that provide citizens with information on how to segregate, and on composting...?
23. Does the BBMP set up the necessary infrastructure for sorting or processing waste?

Representation of waste pickers

24. What is the level of participation in decision-making of waste pickers?
25. What about all waste pickers that are not involved in BBMP/NGO/company initiatives and programs?
26. Do you believe that member-based organizations can successfully represent informal worker interests? Would strong, democratic unions be a better channel?

Broader discourse

27. How is the waste sector contributing to unequal structures in the urban context?

Closing questions

28. How is your organization contributing to educate citizens to change their behavior towards waste (having a better understanding of waste segregation) and also towards waste pickers?
29. What is the long-term goal of your organization?
30. In your opinion, what opportunities and barriers will waste pickers face in the future?

Appendix D: Code list

Code list

- **Code list: Policies and laws**

(The blue-coloured codes are deductive codes from conceptual framework)

- General
 - Law/Policy visions
 - Law/Policy targets
 - Normative discussion
 - Technological focus
 - Duties/Responsibilities
 - Waste generators
 - Ministries and government departments
- SWM regulation related to waste pickers
 - Waste picker definitions
 - Access to waste
 - Trainings and welfare measures
- Governance
 - Institution and capacity building
 - Need for intergovernmental convergence
 - Decentralized waste management
 - Segregation
 - Private sector
 - Stakeholder consultation
- Background information
 - Types of waste and disposal practices
 - Waste generators

- **Code list: Media analysis and interviews**

(The blue-coloured codes are deductive codes)

Codes	Media analysis	Interviews
Background of waste workers		
Women waste pickers	X	X
Migration	X	X
Ethnicity and cast	X	
Waste pickers' children	X	X
Hardships		
Unfair treatment	X	
Miserable working conditions	X	
Brutal events	X	

Humiliation, discrimination	X	X
Social stigma	X	
Day-to-day struggles	X	
Sector-competition	X	
NGO/Civil society		
Support	X	X
NGO mandate	X	X
Ways of involvement of informal workers		
ID cards	X	X
Trainings	X	X
Loans		X
Governmental schemes		X
Professionalised/Upgraded opportunities	X	X
Empowerment to waste managers	X	X
Group formation	X	X
Entrepreneurship	X	X
Sustainable livelihood outcomes		
Recognition	X	X
Revenue streams	X	X
Waste pickers seen as heroes	X	
Professional work environment	X	X
Increased income	X	X
Job regularity	X	X
Barriers to sustainable livelihood outcomes		
Lack of resources	X	
Need for flexibility		X
Exclusion		
Spatial exclusion	X	
Social exclusion	X	
Migration-based exclusion		X
Livelihood capitals		
Financial capital	X	X
Human capital/skills	X	X
Social capital/affiliation	X	X
Politics of waste		
BBMP-NGO arrangements	X	X
Door-to-door collection arrangements	X	X
Decentralised waste management	X	X
Government called to action	X	
Source segregation	X	X
Citizen education and awareness	X	X
Private sector involvement	X	

Appendix E: Excerpts of facilitation table for media analysis

Appendix E1: Basic information, framing tools

Basic information						Framing tools		
Article title	Newspaper source	Type of newspaper	Date of publication	Author	Length / section	News value	Policy reference	Stakeholder experts
Making an enterprise out of picking waste	Times of India	most prominent and largest circulated newspaper and widely recognized news center	13-11-2012	Seram Rabina Devi	502 words			Nalini Shekar (Green activist - co-founder of Hasiru Dala)
30 new centres to help store Bengaluru's dry waste	Bangalore Mirror	Daily English-language newspaper published in Bengaluru	8/3/2021	Naveen Menezes	759 words	30 new DWCCs were set up "thanks to the BBMP" (129 wards already have DWCCs (with a capacity of 3-4 tonnes of dry waste a day		Sarfaraz Khan, joint commissioner at BBMP's Solid Waste Management division; Nalini Shekar, co-founder of Hasiru Dala
Minister's daughter to set "zero-waste example at own wedding reception day	Bangalore Mirror	Daily English-language newspaper published in Bengaluru	27-11-2015	-	531	"zero-waste" wedding is presented as an example set to the public		
Pinch of marchal law	Bangalore Mirror	Daily English-language newspaper published in Bengaluru	28-10-2020	Naveen Menezes	839 words	Marshals have been actively enforcing rules and collecting high penalties		Mahesh, eatery owner; Randeep D, Special Commissioner at BBMP's Solid Waste Management Division

Appendix E2: Excerpt of facilitation table for media analysis – Content

Content									
Content / remarkable points made	Keyword/Buzzwords	Event/story or impact of event	Broader discourse	Positioning of waste-pickers	Quotes	In text- criticism	Call to action	Facts & numbers	Authority/accountability
The work of Hasiru Dala: give trainings for more efficiency in the job of ragpickers and promote dignified treatment by the authorities, educates on ways to segregate and recycle waste; empowerment (sending waste pickers to workshops)	environmentalism; associations; NGO; waste picker		Waste pickers explicitly said to play a huge role in reducing the green-house gas effect	As environmentalists/green workers and hard-working individuals; trained entrepreneurs in the future					
New centres with large storing and sorting space and toilet facility set up; Outcome of authorization of BBMP to let NGOs run DWCCs: higher waste segregation and collection of dry waste in every ward (from 500 kg to at least 2 tonnes/day);	NGOs; DWCCs; rag pickers; low-income groups			Waste pickers are trained by NGOs on dry waste collection from households; they are paid by the BBMP	"There is a significant increase in the dry and wet waste collection ever since the new system of the door-to-door waste collection came into place. This has resulted in the reduction of mixed waste going to the landfills,"		Hasiru Dala calls for an upgrade of the DWCCs;	60% of dry waste is non-recyclable, currently sent to cement factories; separate vehicles are sent to collect waste from households. Private service providers are contracted through a bidding process to collect wet waste; while NGO is responsible for dry waste	The BBMP extends the infrastructure for waste collection
Transport ministers daughter marriage with around 20,000 guests to be "zero- waste"	environmentalism; cruelty-free lifestyle; waste management;	Waste pickers involved in managing the waste of big wedding ceremony		Waste pickers ensure that no bulk generated waste (eg at weddings) lands in landfill					
High penalties imposed by marshals deployed by the BBMP to hoteliers not respecting waste segregation rules (besides covid regulation)	waste segregation; penalties; rules; hoteliers				"We, however, segregate the waste at the time of handing it over to the waste pickers. What marshals insist on is practically impossible to follow" (Mahesh); "About 2,000 tonnes of waste continues to remain non-segregated. Both the High Court and the National Green Tribunal have been clear about segregation of waste at source" (Randeep)	Hoteliers feel disadvantaged compared to politicians who organize campaigns at crowded markets; SWM BBMP Commissioners claims that rules have been fixed by the government and need to be respected			
Need for segregation at source; participation of households in garbage management and public awareness is emphasised; if everyone segregated their waste, the burden on BBMP and environment would decrease (reduced fuel for transportation and costs)	Segregation; decentralised waste management; saving emissions; governance						Call for the support of the local authority for "allotting landfill space" and changing the infrastructure in the waste collection system; more space is required	every household generates about 500 kg to 700 kg of organic waste a day, and about 3 kg to 4 kg of dry waste (excluding newspapers and magazines) in a month.	