

The management of South African landfills and waste pickers on them: impacting lives and livelihoods.

Effective management of waste and the promotion and management of recycling activities are necessary for sustainable and liveable cities. A key but unrecognised element in promoting recycling is the efforts of waste pickers who make a living from recycling mainline recyclables. This article aims to describe the approaches used on ten landfills in South Africa to manage waste pickers' access to recyclables and their daily activities on the landfills. A multiple case study design and cross-case analysis were used in this study. The sustainable livelihoods framework (SLF) was used to analyse and explain the data. The results showed that waste management policies and practices directly influence the waste pickers' access to recyclable waste and their livelihoods. Finally, some inclusionary and exclusionary practices are highlighted that could guide inclusive, participatory and co-productive practices for waste pickers in South Africa towards increased recognition, access, dignity and income.

Keywords: Landfill waste pickers; landfills; waste management; sustainable livelihoods framework, unemployment

1. INTRODUCTION

Good waste management is necessary to build sustainable and liveable cities. According to the World Bank, it is necessary to improve solid waste management as the pace of waste generation is increasing to the point where it will double by the year 2025 (Hoorweg et al., 2013; World Bank, 2016). Globally, 1.3 billion tonnes of waste are generated per year, and it is expected that by the year 2025, 2.2 billion tonnes of waste will be generated per year (World Bank, 2016). In contrast with the sophisticated waste management practices in developed countries, many developing countries still struggle to dispose of waste generated, mainly due to the burden on municipal budgets and the lack of knowledge and skills of the officials responsible for waste management (Fergutz et al., 2011; Guerrero et al., 2013).

In South Africa, 54.425 tonnes of waste are generated per day - the fifteenth highest in the world (World Bank, 2016). The Department of Environmental Affairs (DEA) states that in South Africa in 2011 only approximately 10% of waste was recycled. The unrecycled balance (98 million tonnes) ended up in landfills (DEA, 2012). It is therefore not surprising that South Africa's landfill areas are rapidly running out of space (Chvatal & Smit, 2015). In 1998, the South African Government drew up the National Waste Management Strategy to achieve an integrated waste management solution. The responsibility of managing landfills was given to the local municipalities under the Municipal Systems Act (Act 32, 2000). The focus of the waste management strategy includes the three "R's", i.e. reduce (waste minimisation), re-use and recycle, as well as composting and disposal (Chvatal & Smit, 2015; Garner, 2009). The aim of the Strategy was to ensure that all metropolitan areas, secondary cities and large towns would initiate separation-at-source programmes by 2016. South Africa also committed itself to the Polokwane Declaration in 2001, stipulating that by 2022 there should be a 75% diversion rate of recyclable waste from landfills (Ackroyd, 2014; DEA 2001).

A key, but unrecognised element, in promoting recycling are the efforts by an estimated 60 000 to 90 000 South African waste pickers who make a living from recycling mainline recyclables, either on the streets or on the landfill sites. The waste pickers' recycling activities are at the lower end of the recycling value chain and yet, over the years, have played a key role in the recycling process (Chvatal & Smit, 2015;

Samson, 2015; Viljoen, 2014). The waste pickers' activities enabled municipalities to save between R309,2 and R748,8 million on air space in 2014 (Godfrey et al. 2016), but the financial importance of their contribution to municipalities has yet to be valued and supported by the recycling sector.

The barriers to entering informal waste picking are considered to be low, however, various other barriers are hindering the waste picker's access to, collection and selling of recyclable waste (Viljoen, 2014). Inclusionary policies and practices towards waste pickers in the waste management plans of municipalities are becoming critical. The United Nations Research Institute for Social Development (UNRISD) (2016) clearly states that no development can be regarded as sustainable if it is not inclusive and participatory and if the affected stakeholders are not able to make decisions on aspects that affect their lives. Facilitating inclusion and participation require respect for human rights and democratic governance (Dugarova, 2015; Lindell, 2010; Radchenko, 2017). Fergutz et al. (2011) therefore propose policies and practices that facilitate inclusive 'co-production' between local government, business and the informal waste pickers. Further research has shown that waste management policies and practices directly influence the waste pickers' access to recyclable waste and their livelihoods (Blaauw et al., 2015; Chvatal & Smit, 2015; Godfrey et al., 2016; Nzeadibe & Mbah, 2015).

This article aims to describe and analyse the different waste management practices used on ten landfills in South Africa to manage waste pickers' access to recyclables and their daily activities on the landfills. It further assesses the positive and negative externalities that these management practices have on the livelihoods and quality of life of landfill waste pickers.

2. METHOD

A multiple case study design and cross-case analysis was used in this study. Case study research is a strategy that focuses on understanding the dynamics present within a single setting (Eisenhardt, 1989; Khan & van Wynsberghe, 2008), and combines data collection methods, such as archives, interviews, questionnaires and observations (Baxter & Jack, 2008; Eisenhardt, 1989). Case study research further aims to answer the questions "why" or "how". Analysing multiple case studies enables

the researcher(s) to explore differences and similarities within and between cases, from which new knowledge can emerge. It is also important to recognise that case studies do not allow for broad generalisations (Baxter & Jack, 2008). The question asked in this study was:

How do practices by managements of landfills affect the livelihoods of the landfill waste pickers?

The results described in this article use data and cross-case analyses of ten landfills in South Africa. Data was collected through questionnaires and qualitative interviews with landfill waste pickers, municipal waste managers and municipal workers, as well as Buy Back Centre (BBC) representatives and the researchers' own observations. The selected landfills were visited and data were collected from a total of 373 waste pickers between April 2015 and April 2016. On each landfill, the sample size exceeded 50% of the waste pickers.

In order to facilitate the cross-case analysis, the sustainable livelihood framework (SLF) was used. See Figure 1 for a schematic representation of its relevant dimensions.

➤ **Figure 1: The dimensions of the SLF**

Source: Adapted from DFID (1999) and Scoones (2009)

Livelihoods can be seen as a means of activities, to make a living (Chambers, 1995; Scoones, 2009). The SLF offers a unique and comprehensive framework to collect diverse data and provide an integrated analysis of complex and highly dynamic contexts and cases (Scoones, 2009). The SLF further focuses on factors and processes that either constrain or enhance impoverished people's ability to make a living in an economically, ecologically and socially sustainable manner (Krantz, 2001).

The SLF emphasises that poverty is not only about low income, but includes other aspects such as assets, capabilities, lack of services, politics, institutions and power relations. The SLF is person-centred and acknowledges that the poor are best aware

of their situation and that they should be key players in the design of policies and practices intended to better their lives (Krantz, 2001, Scoones, 2009).

In summary, Scoones (2009) defines a sustainable livelihood as one that (1) creates and maintains working days; (2) reduces poverty; (3) enhances well-being; (4) develops capabilities; and (5) can recover from obstacles and problems and maintains the natural resource base. These criteria are used in the description of the livelihoods of the waste pickers and their endeavours to earn a living from the landfill sites mentioned in the study.

3. RESULTS

This section starts with a summary of some key characteristics of the ten landfill sites¹ and the number of landfill waste pickers on the sites. This is followed by the cross-case analysis of the ten landfills according to the five dimensions identified in the SLF.

➤ Table 1: Overview of the sites

Source: Research data

Dimension 1: Vulnerability context

The vulnerability context refers to the external environment in which people exist that affects their livelihoods, such as the broader political and policy settings as well as socio-economic conditions. Important to the issue is the fact that affected persons have very little control over the external environment (Chambers, 1995; DFID, 1999; Nzeadibe & Mbah, 2015; Scoones, 2009)

The activities of waste pickers on the landfills must be seen against the background of South Africa's high unemployment rate (currently 26,7%) (StatsSA, 2018) and one of the highest inequality and crime rates in the world (Bhorat, 2015). The structural inequalities are as a result of the previous apartheid era policies as well as the failed macro-economic policies (RDP, GEAR, ASGISA) of the current (ANC) government in South Africa (Du Toit & Neves, 2007; Hicky & Du Toit, 2007), which has not been able

¹ Abbreviations were used to indicate the landfill sites for anonymity.

to develop and implement successful policies to reduce unemployment and inequalities (Valodia & Devey, 2012; Wills, 2009). Poverty in South Africa is widespread in many rural areas of the country, and many unemployed people tend to move to urban areas in search of employment. Being unable to find employment, many of these individuals endeavour to eke out a living in an informal urban economy (Neves & Du Toit, 2013)

In 2003, Thabo Mbeki, President at that time, acknowledged the existence of a second or informal economy, which was and still is, viewed as structurally separate from the formal economy (Valodia & Devey, 2012). Although the formal and informal sectors are integrated and interconnected, little has been done to develop policies and processes to facilitate the acknowledgement, connection and co-production between the formal and informal economies (Du Toit & Neves, 2007; Fergutz et al., 2011; Hicky & Du Toit, 2007; Valodia & Devey, 2012).

The landfill waste pickers are part of the unemployed, functioning in the informal economy on the landfills, operating next to, instead of in conjunction with, the formal waste management system. No clear guidelines or policies exist which could guide local governments on how to incorporate the informal waste pickers into the local government systems (Godfrey et al., 2016). Each municipality currently decides how it manages, includes or excludes the waste pickers' activities. This was evident from the ten landfills we visited.

On the positive side, the municipality associated with landfill GR built a material recovery facility (MRF) next to the landfill where waste is delivered onto a hard surface. The waste pickers have the opportunity to collect and sort the recyclable waste and separate what they regard as valuable. What is left is then taken to the landfill. The waste is easily accessible and there is a building where the waste pickers can sort and store the recyclable waste and which provides shade, toilets and water to the waste pickers. At the other extreme are landfills that have no access control, no water or toilets available to the workers; as noted by one of the interviewees: "... *we have to go to the bush*". Due to the lack of supervision on landfills such as OU and PR, gangsters and substance users are present who steal the collections and/or earnings from, in particular, the women, causing unsafe working conditions. One of the women shared that the "*naope boys (referring to the drug they use) always here causing trouble*".

Other participants confirmed that they are “*Surrounded by a lot of addicts*” and “*The ‘skollies’ (referring to the gangsters) are dangerous*”.

One of the greatest risks on the landfill sites was identified as the danger of being run down by the trucks. A participant noted that “*The trucks can hit you if you're not careful*”. It was further mentioned that “*When trucks come in, people rush and push each other*”. This is less the case on the MRF on GR landfill as the waste pickers have to wait until waste is dumped on the hard surface before they can access and sort the recyclables.

To prevent waste pickers being hit by trucks and tractors, the landfill managers on PO, VR and BN have appointed ‘pointers’ to separate the trucks dumping the waste from the areas being worked on by the waste pickers. It is the responsibility of the pointers to ensure that the waste is not dumped where the waste pickers are sorting their recyclables. The study by Blaauw et al. (2015) confirmed this practice of using pointers to safeguard waste pickers.

Working on the landfill further poses a number of health risks. Being cut by needles, glass and tins was highlighted by many of the waste pickers, particularly as they are exposed to these objects without wearing gloves or protective clothing. Comments made by the participants referring to the health risks were: “*Cutting your fingers or stepping on a nail*” and “*we get hurt if we don't have gloves*”. In a study by van Heerden (2015), who bought gloves for the street waste pickers with whom he interacted, he found that they refused the gloves and indicated that they preferred to work without gloves as they “feel” their collections when they scratch between the waste. Similar findings were shared by the waste managers who provided gloves and masks to the waste pickers. The researchers also observed that the masks given to the waste pickers on landfill ST were hanging around their necks but were not being used.

More health risks mentioned by the waste pickers are being in contact with rotten food and polluted water, “.... *eating rotten food and drinking the wrong things*”. This includes being in contact with “*nappies and aborted babies*”, and encountering “*snakes*”. A female waste picker shared how she scarred her face when “*burning the plastic*” (to get access to the copper). It was further mentioned that their “*cuts (wounds) get infected if not treated*”. Some shared that they develop chest problems due to the dust, smoke-polluted air, inhaling of chemicals and rotten objects and because of the cold

weather in winter. This may lead to the development of illnesses such as Tuberculosis (TB): *“We get TB easily from the smoke and the chemicals”* and *“skin rashes”*.

Concerns were also raised about substance abuse and fighting on the landfills. A few comments from the waste pickers allude to these risks: *“The boys can stab you when they are drunk”*. One shared that they fight and that his *“friend has been stabbed to death”*. Another sum up his life on the landfill as: *“It’s nice but dangerous. You need to be cautious”*

On the sites such as GR, ST, VR and PO, there are officials on the landfills who implement rules and prevent fighting and substance use on the landfill, while e.g. on the OU landfill, there only one female official responsible for recording the volume of incoming waste, who was not able to, or does not have the mandate to, intervene. The driver of the caterpillar earth-moving machine covering the waste, indicated that he *“just watches them (the waste pickers)”* and does not get involved.

Weather conditions such as rain and extreme cold and heat affect the waste picking activities directly. The heat in summer was mentioned as affecting their functioning on the landfill if they do not have access to shade. A waste picker mentions she gets *“hot and becomes disorientated”*. It is only the MRF at landfill GR that provides shelter against these harsh conditions

In summary, it is quite evident that waste pickers are vulnerable. Some vulnerabilities are inherent to waste picking (such as dirt, pollution and toxic objects) and cannot be changed by management practices, but factors such as cold and heat and criminal behaviour can be managed and will be discussed further.

Dimension 2: Livelihood assets

The livelihood assets refer to the assets, resources and capacities of the people within their context. In the SLF, reference is made to the different inter-related assets such as physical, financial, human capital, natural and social assets (DFID, 1999; Scoones, 2009; Nzeadibe & Mbah, 2015).

Physical assets

The main physical asset is the recyclable waste on the landfill that provides a livelihood for the waste pickers. It is not only the recyclable waste that is of value, but also the access to food, clothes, shoes, jewellery, wood, household objects such as pots, pans, curtains, mattresses and other furniture that it provides. Fifty per cent (50%) of the waste pickers confirmed that they are dependent on the food they access on the landfills. On the OU landfill, the waste pickers shared that they refer to the landfill as “*oumies*” (“*old madam*”), who is seen as the provider of all their needs - “*sy gee vir ons alles*” one participant commented. The waste pickers, as well as other community members (who do not recycle) collect clothes, food, household goods and firewood from the landfill. Electronic and electrical goods, such as kettles, irons, and cell phones, were also mentioned as being collected either for their own use, or to be sold or burnt for the valuable metal parts in them. Of importance to the waste pickers is the easy access to the recyclables and goods, which relate directly to how the landfill and waste pickers are managed.

Other physical assets for the waste pickers are the basic facilities accessible, which refer to their working conditions. Table 2 provides an overview of the facilities accessible to the waste pickers on the different landfills.

➤ **Table 2: Basic facilities present at the landfill sites for the waste pickers**

Source: Research data

Landfills such as PR, BO, BR and OU have none of the facilities available to the waste pickers. Having access to shade under which they can sort and store their recyclable waste was valued by the waste pickers at the MRF at the GR landfill. They explained that it allows them to store their recyclables during the night and they can continue sorting recyclable waste when it rains and when it is very hot or cold. The waste pickers confirmed that access to basic facilities helps to build their dignity.

Human capital

The profiles of the waste pickers on the landfills provide some interesting information regarding their age.

Just more than 42% of the respondents in the survey were younger than 35 years of age. The average age of the waste pickers is 39, with the youngest being 18 years old and the oldest aged 71. The importance of the ages of the waste pickers is that it illustrates that waste picking on landfills is accessible to young and old, if they are physically able to do the work.

The profiles of the waste pickers showed that most waste pickers have very low levels of education, which might explain their inability to access work in the formal economy. Figure 2 shows the highest school educational attainment of the waste pickers in the study.

➤ **Figure 2: Highest school qualification of landfill waste pickers**

Source: Research data

Of the total number of respondents, 9% do not have any schooling, while 43.7% obtained some secondary level education, which ranges from grade 8 to 12. Less than 8% completed matric. From the qualitative question asked as to why they have not completed school, the following themes emerged:

➤ **Table 3: Reasons for leaving school before Gr 12**

Source: Research data

Financial difficulties, persistent poverty, family problems and behavioural problems were given as the most prominent reasons for not completing school. These findings are supported by the findings of Schenck et al. (2016) and Nzeadibe and Mbah (2015), who also encountered low levels of education amongst the waste pickers and not being able to access formal work. On the question of whether they have had formal employment, 43,5% of the waste pickers indicated that they have worked before engaging in waste picking, as shown in table 4 below:

➤ **Table 4: Types of jobs with payslips held by landfill waste pickers**

Source: Research data

The results in the table reflect that the type of work the 159 waste pickers have been doing prior to waste picking is mostly unskilled work. More than half of the waste pickers (56,5%) have never worked previously in formal employment, which lessens their chances of ever being formally employed. Waste picking is then one of the few options to earn an income as will be discussed in the next section.

Financial assets

Dependence on access to and selling of the recyclable waste became very clear. With reference to the fact that 56,5% of the waste pickers never had formal work, it is no surprise that the participants shared, as the reason for being on the landfill, that it was to earn a living. According to the waste pickers, waste picking is in many instances “*the only choice/option*” they have to earn a living given the low barriers required. A further significant benefit from collecting recyclables, shared by the waste pickers, is the access to a “*daily income*” or “*quick money*”. It was explained by the waste pickers that the income received is not stable and differs daily. Their income depends on factors such as the volume of recyclable waste delivered to the landfill and the accessibility to the recyclable waste. The weather, their health and the fluctuating prices of the recyclable waste were also cited. For these reasons, the waste pickers’ actual income in the week before the interview was captured.

➤ **Figure 3: Mean and median income for the previous, good and bad week**

Source: Research data

The median income for a good and bad week was R500 (42,34 USD)² and R200 (16.93 USD), respectively. There was also a large difference between the mean

²Exchange rate as on 22 March 2018 https://www.google.co.za/search?source=hp&ei=CI-zWo6-M5D2kwXO_YrgBQ&q=exchange+rate&oq=exc&gs_l=psy-ab.1.0.0i131k1j0l2j0i131k1l2j0l3j0i131k1j0.2250.3710.0.6326.4.3.0.0.0.311.868.2-2j1.3.0....0...1c.1.64.psy-ab..1.3.867.0...0.N46__il9vbw

income for a good week R768.15, (65.04 USD) and a bad week-R288.69 (24.44 USD). The maximum earning indicated for the previous week was R2000 (169.34 USD). On average the waste picker can earn around R770 (65.20 USD) in a good week. In a bad week, the average earnings will be in the region of R290 (24.55 USD).

Only 21,7% (81) landfill waste pickers indicated that they, or one of their dependants, have additional sources of income. The additional income is mostly in the form of social grants such as the child support grant received by 65 waste pickers and 54 dependants of the waste pickers as shown in Table 5. Only 6 waste pickers and 22 dependants received additional income from another job.

➤ **Table 5: Mean and median income received from additional sources of income (=81)**

Source: (Research data)

The median income received from old age grants, as well as pensions from a previous job, was the highest, but only a few received such additional incomes of which the majority received child support grants with a median of R660. The median income for waste pickers, from another job, was the lowest, at R240.

For the grater majority of landfill waste pickers, the income they earn by collecting and selling recyclables is their only income. Preventing them to access the recyclable waste will imply the removal of their livelihood.

Social assets

Social assets/capital are defined as the relationships and networks developed by people to survive and improve their livelihoods (Adama, 2012; DFID, 1999; Neves & Du Toit, 2013).

Two sets of important relationships became clear in the study:

The one social network is the family network as support, but also as an added responsibility, increasing the waste pickers' vulnerability. The 331 respondents reported a total number of 1 178 dependants who rely on their income.

➤ **Table 6: Total, mean and median number of dependents (n=331)**

Source: Research data

The mean number of dependants, who depend on the LWPs' income, excluding the waste picker, was four. The maximum number of dependants was 15 and the median number of dependants was three, excluding themselves.

A second social network exists among the waste pickers as explained in Figure 4.

➤ **Figure 4: Ways in which landfill waste pickers help each other**

Source: Research data

From previous studies (Schenck et al., 2016; Viljoen, 2014; Van Heerden, 2015), it emerged that the waste pickers are self-employed and work independently but are supportive of each other. The results of this study confirm the collaboration between the waste pickers on the landfill sites, with 68% reporting that they support each other. Much of this support is transactional collaboration such as help collecting and carrying their recyclable waste or selling on behalf of each other, although when the waste pickers were further prompted, they made it very clear that they do not work as a collective or share their earnings. Sharing food and providing care when someone is sick are also common. The support plays a significant role in their well-being, which will be discussed later in this article.

Dimension 3: Institutional processes and policies

This dimension refers to analysing the organisations, institutions, processes and policies affecting the livelihoods of people (DFID, 1999; Scoones, 2009). It is these institutions and policies that determine the sustainability of their livelihoods, and how and when the waste pickers can access, collect and sell the recyclable waste.

Institutions such as the municipality or the private waste management company responsible for managing the landfill, as well as the BBCs, play the most significant role in the lives of the waste pickers. Without the existence of the BBCs, it would not be possible to collect and sell recyclable waste (Viljoen et al., 2012). On visiting the different BBCs, it emerged that there are complex price structures depending on a variety of factors, such as transport costs, quality of recyclable waste and global macro-economic price fluctuations.

The inclusionary and exclusionary policies and practices on the ten landfills can be summarised in three groups, i.e. the uncontrolled, medium controlled and controlled sites as observed by the researchers.

Uncontrolled landfill sites

The management of landfills BO, PR, OU and BR is limited. The only officials on the BO, BR and OU landfills were women who record the number of incoming trucks. No-one controls or restricts access and there is free movement of waste pickers and other people on the landfills. There are no weighbridges, water, toilets or shade at the landfills.

Discussions with the waste pickers on the OU landfill revealed gangsters who use substances and rob, in particular the women, of their earnings. There are no officials or structures on the landfill that can intervene and maintain order. The waste manager of the OU municipality was sympathetic towards the waste pickers, but, due to inefficiency and corruption within the municipality, it was placed under administration at the time of the research (Quintal, 2015), and therefore little or no management policies were developed and implemented.

The uncontrolled landfills provide an advantage to the waste pickers of freedom of movement and collection. The waste pickers on these landfills shared that they also collect over weekends. On the negative side, the lawlessness affects the safety of the waste pickers and the community, enhances exploitation and perpetuates undignified working conditions. In addition, there is no platform where the waste pickers can voice their concerns to the managing companies or municipalities.

Controlled landfills

Landfills PO and ST outsource their landfills, while VR is managed by the municipality. These landfills have controlled access. On all three of these landfills there were previously an unmanageable number of waste pickers present. However, gangsterism and unsafe conditions for the waste pickers and the community members became hazardous, and it was therefore decided, with the best of intentions by the municipalities, to fence the landfill and provide controlled access. Only restricted numbers of waste pickers on the landfill are permitted. On these landfills, provision is made for water and sanitation. On landfill VR, provision is made for shaded space where the waste pickers can sort and store their recyclable waste, but the facility is far from the dumping area on the landfill and, as a result, is not used by the waste pickers. A further restriction implemented by the PO management is that only men are allowed to collect recyclable waste on the landfill *'to make things less complicated'*, according to the landfill manager, and *"easier to manage"*. The positive side of these management approaches is that there is control, order, safety and more dignified working conditions. On the downside, these policies have, according to the waste pickers, an impact on their income. On the ST landfill, for example, at 7:30 in the morning the first 40 pickers at the gate are provided with 'day-glow' jackets and given access to the landfill after they have registered with their identity documents. The 'day-glow' jackets make them visible and indicate that they have the right to be on the landfill. At 15:00 in the afternoon, all waste pickers have to leave the landfill so that the waste company can cover the waste. These rules give the waste pickers the opportunity to recover their recyclable waste and, at the same time provide safety measures to prevent waste pickers being run over by the tractors. The waste pickers shared that the ST landfill's "first-come first-serve" policy has resulted in their having to leave home as early as 3:00 am to ensure access to the landfill. Some live close to the landfill, while others live an hour's walk from the landfill. These circumstances create additional vulnerabilities

In addition, it was shared that a limited volume of recyclable waste can be recovered before 15:00 when the waste pickers have to leave the landfill as some of the trucks delivering the waste only arrive at the landfill around 11:00 to 12:00. This can result in a lower income for the waste pickers and a shortened life span of the landfill. The MRF at the GR landfill was built to get the waste pickers off the landfill site and increase

their access to the recyclable waste. All waste is taken to the MRF where the waste pickers can recover the recyclable waste and other valuables. The MRF is fenced and has strict access control. Access is on a “first come, first served” basis and 20 waste pickers need to sign in by producing their identity documents. In the morning, the trucks dump the waste on a cement surface for the waste pickers to sort. At 14:00 each day, the front loader clears the surface and the waste not recovered goes to the landfill. After the removal of the waste, waste pickers can continue sorting the recyclables until the BBC picks them up around 17:00 with their sorted recyclables, but they cannot take out more recyclables. This practice also restricts the amount of recyclable waste they can recover.

➤ **Figure 5: Material recovery Facility in GR**

Source: Authors

Officials, who manage the weighbridge and record the volume of waste coming in and going out of the landfill, mentioned that they monitor the activities of the waste pickers to ensure order. The officials indicated that they have the mandate to implement some disciplinary measures, such as banning a waste picker from the site if he or she does not adhere to the “rules” of the MRF.

The MRF in particular provides dignity to the waste pickers, as facilities such as water, toilets and shade are available and waste pickers can collect recyclable waste in all weather conditions. They can also store their recyclables at the MRF without the risk of it being stolen. The first-come first-serve method used and the providing of identity documents, can be regarded as exclusionary.

Semi-controlled sites

The BN, BS and BO sites can be regarded as semi-/medium controlled sites with staff present who control waste entering and exiting the landfill, but who do not control the waste pickers. Toilets and water are available to waste pickers on the BN and BS landfills, but no shade. Waste pickers create their own shade as shown in figure 6.

➤ **Figure 6: LWP protecting themselves against the sun at the BN landfill site**

Source: Authors

At none of the 10 landfills could we find active participatory decision-making platforms between the management and the waste pickers. This only took place on the ST landfill, where waste pickers have an elected committee which are consulted on behalf of the waste pickers.

Dimension 4: Livelihood strategies

Livelihood strategies refer to the activities and decisions people make in order to achieve their livelihood goals (DFID, 1999; Nzeadibe & Mbah, 2015). The reasons for the waste pickers to be on the landfills were explored:

Reasons for being on the landfill

The waste pickers were asked what the reasons were for being a waste picker. The following themes appeared from the qualitative data:

Theme 1 speaks of the only opportunity available to earn an income. Some comments included: *“I had no other option”*; *“there was work and money to be made”*; *“I Cannot find another job”*; *“I need to earn to support my family;”* and *“...this is the only alternative option to survive”*.

Low skills and lack of qualifications make the waste pickers less fit for formal employment in the current competitive economic climate. Some workers explained that they know they will never get a formal job as they are *“too old”*, are unemployable as they have *“never been employed”* or *“have been in prison”*.

Theme 2 refers to the absence of barriers to access waste picking: A waste picker mentioned that *“I didn’t have an ID so I cannot work in the formal sector”*. It became clear that not having an ID is a barrier on controlled landfills which require IDs for access to the landfill. Further comments were: *“...I cannot work (formally) with TB”*; *“The metro police arrested people who were selling on the streets so I came this side (the landfill) because I didn’t want to go to jail”*.

Barriers such as lack of qualifications, poor health and regulations do not prevent the waste pickers from using the opportunity the landfills offer.

In Theme 3 the comments highlight the fact that being on the landfill and earning a living assist “*to avoid life of crime*” or “*to sit and do nothing at home*”. To work and have an income is “*better than being on the road and getting up to mischief*”.

Theme 4 of the reasons why the waste pickers came to the landfill indicated that some use it “*to have extra income*”. Some of the waste pickers who are seasonal workers do waste picking in the off-season to get an “*income when not (sheep) shearing*”.

Theme 5: There were also those who prefer to be waste pickers in order to be independent and to be their “*own boss*”.

Waste picking routine

The waste pickers explained that it is their routine to go to the landfill daily, as this is their workplace or ‘*their job*’. If they do not recycle daily, there will be no income and food for their families. They arrive at the landfills as early as possible. On the controlled access landfills (ST, PO, VR GR), they cannot enter before 7:30 in the morning as the gates only open by 7:30, while on the landfills with no access control, they can enter and leave at any time and on any day. Some workers sleep on the landfills in temporary structures. Most of the waste pickers leave the landfills after the BBCs have picked up the waste pickers and their recyclables in the afternoon around 17:00 and paid them for the waste that they have collected. On all the landfills in this study, the waste pickers were paid daily.

- **Figure 7: Waste pickers and their recyclables being picked up by the truck from the BBC**

Source: Research data

From discussions with the BBC managers from landfills GR, OU, ST, and VR it was discovered that the waste pickers who receive government grants tend to recycle less the first week of every month, when the grant payments were received. From the second week or when the “*grant money is spent*”, as noted by one of the BBC managers, the waste pickers return to the landfills.

Period involved in being a waste picker

In answer to a question to determine the number of years in which the waste pickers have been involved in waste picking, more than half (56%) replied that they have been involved in waste picking activities for more than five years, as indicated in Figure 8.

➤ **Figure 8: Period involved in waste picking activities**

Source: Research data

Significantly 31% shared that they have been picking waste for more than 10 years. This is an indication of the long-term nature of this informal working activity.

Waste picking activities

Not all landfill waste pickers collect all recyclable waste available on the landfill site. The waste pickers mentioned that they mainly collect those items which the BBCs buy from them. Landfill VR was e.g. the only landfill where waste pickers collected bones, which were supplied to the BBCs for the bonemeal milling company close to the town. Some waste pickers are selective in the type of recyclables they collect because of the different prices paid for the different recyclables. It was noticed that the waste pickers on the ST landfill did not collect the card board boxes. When questioned about this, the waste pickers said that, due to the limited time they have available to access the waste, they would rather go for the scrap metal and polyethylene terephthalate (PET plastic), which provide the best income. If they could spend more time collecting, they would take the card board boxes to sell to a BBC which buys them. An adjustment in the management policy in this regard could allow for greater productivity and income for the waste pickers.

Besides the recyclable waste, some waste pickers collect other products for their own or for family use or to sell. These products include bricks, clothes, blankets, cool drink crates, electric appliances, food, computers, heavy loading bags, leather and wood.

From the 365 waste pickers who indicated to whom they sell their waste, the majority (92%) depend on buy-back centres to buy their recyclable waste. Another 8% sell their

waste products to private individuals. On the PR and BR landfill sites there were informal buyers who buy from the waste pickers and then sell to the formal BBCs. This is an interesting phenomenon, which adds another link in the recycling chain and, according to the waste pickers, negatively affects their income. The waste pickers indicated that their recyclables are being collected by the BBCs and other buyers, as the landfills are too far out of town for the waste pickers to deliver their recyclables. By collecting the recyclable waste from the waste pickers on the landfill the BBC's ensure that the waste is sold to the particular BBC or individual.

Dimension 5: Livelihood outcomes

This dimension refers to the achievements or the output of the strategies of the waste pickers (Nzeadibe & Mbah, 2015). According to Scoones (2009), livelihood strategies should result in creating working days; reducing poverty; enhancing the well-being of the person; developing capacity; and should be able to assist in recovering from setbacks or unexpected problems. The livelihood outcomes will be discussed according to Scoones' (2009) outcomes:

Outcome 1: Creation of working days

Collecting and selling recyclable waste on the landfills create regular working days for the waste pickers in order to ensure a daily income. It depends on the waste pickers how many days per week they want to work and it depends on the management of the landfill whether they allow the waste pickers on the landfills over weekends. Some of the waste pickers indicated that they work seven days a week. Working on the landfill allows for some flexibility, as mothers shared that they are able to attend to their families in the morning and see their children off to school, after which they can come to the landfill. The men usually start earlier and leave later. Some of the waste pickers also mentioned that this allows them to have a choice when and how often they want to work.

Outcome 2: Poverty reduction

The informal economy is mainly seen as a subsistence strategy, (Nzeadibe & Mbah, 2015; Radchenko, 2017). The current income of the waste pickers assists them to sustain themselves and their families, as supported by Turner et al., (2014). It is argued that factors such as good governance, maximum access to recyclables and dignified protective working conditions can assist in increasing their income.

Outcome 3: Enhance the subjective well-being (SWB) of the landfill waste pickers

Scoones (2009) argues that a livelihood should enhance well-being. One of the questions asked of the waste pickers was to determine how happy they are (on a scale of one to ten with ten being very happy and one being not happy) with their life on the landfill, given the working conditions described in the study. Figure 9 shows the results of the subjective experiences shared by the waste pickers.

➤ **Figure 9: How happy are the landfill waste pickers with life at present**

Source: Research data

The self-reported happiness of the waste pickers mirrors the harsh reality of their lives. Half (52,9%) of the respondents indicated subjective well-being values of 5 and less. The mean score is 6.2 for the whole research population, with the median being 5.

Well-being, according to Hicky & Du Toit (2007), is linked to many factors, such as working conditions, sense of agency, social relations and income. These aspects were confirmed by the waste pickers:

The waste pickers' unhappiness included the following themes:

Lack of Safety: *"Unhappy about violence among other waste pickers"* and

"Corruption-There are nyaope smokers. We don't work peacefully"

Lack of support *"Nobody really cares about us and don't help us"*

Lack of dignity: *"I have no choice. The place is not conducive for people"*

Themes indicating the reasons for being satisfied to be working on the landfill were:

Opportunity to daily income:*" I Get paid daily"*

Sense of independence/agency: *“I am self-employed, work when I want”* and *“Nobody tells me what to do”* and

“I have the freedom to work as it pleases me”.

Sense of responsibility: *“Being able to assist my mother with her income”,* and

“Just happy I can provide for my kids and send money home”.

Experience of social support: *“I like it here. I have many friends”* and

“We help each other out a lot”

Outcome 4: Develop capabilities

One of the major factors in poverty reduction is the growth of people’s capabilities (Radchenko, 2017; Rodrik, 2015; Scoones, 2009). This was also confirmed by the waste pickers. The waste pickers shared that the skills needed to recycle are learned *“on the job”*. They learn from each other and from the BBCs what is of value and how recyclables should be salvaged and sorted. They gain knowledge regarding the prices paid for the recyclables, the fluctuation in the prices and, in particular they learn which BBCs are willing to pay the best prices for various items.

Outcome 5: Recover from setbacks

A livelihood is sustainable when it is able to recover from setbacks. (DFID, 1999; Rodrik, 2015; Turner et al., 2014). The volume of waste generated is on the increase and waste recycling is becoming more critical and necessary. The biggest threat to the livelihoods of the waste pickers is linked to waste management of municipalities in general, including the management of the landfills, the threat of closing the landfills, technology and the possibility of policies and practices that could make waste pickers obsolete. This study showed that careful consideration should be given to decisions made regarding the waste pickers. Not all waste pickers e.g. will be able to pick waste on the kerbsides (if that is an option) due to limited physical health, strength and safety. The studies by Schenck et al. (2016) and Viljoen (2014) also showed that women are less able to operate as street waste pickers. This study showed that MRFs could be considered as more viable and dignified options.

4. DISCUSSION AND CONCLUSION

This article attempted to provide an overview of the management of ten landfills in South Africa and the effect that the various ways of non/governance has on the livelihoods of the waste pickers. Using the SLF effectively as an analysis framework, the article describes complexities, strengths and vulnerabilities in the livelihood of the waste pickers and how this could be improved if well managed by the municipalities. The SLF further emphasised the complex interplay of the relationships between the role players involved in the landfills. The analysis further highlighted the following lessons learnt from the ten case studies:

1. All actions or non-actions by municipalities in respect of landfill waste pickers have consequences on the livelihoods and dignity of the landfill waste pickers. Uncontrolled landfills may provide sufficient waste, food and household necessities, but the working conditions are harsh and undignified and, in addition, in many cases there is no provision of shade, toilets and access to water. A 'free for all' landfill site results in fierce competition, gangsterism and increased risks for the waste pickers and the community members.

Controlled landfills and MRFs, on the other hand, minimise the risks, ensure more dignified working conditions and make the landfill more accessible to the public. However, the critical, unintended consequences emerging from the case studies are that a landfill, where access and numbers are formally controlled, results in the exclusion of some waste pickers, as well as time constraints limiting access to recyclable waste and income. The limited time for recyclable waste recovery causes shorter lifespan of the landfills.

2. This study also supports Fergutz et al. (2011), Guerrero et al. (2013), Chen & Ijjasz-Vasques (2016) and Lindell's (2010) findings that municipalities should commit to clear guidelines, sufficient budgets and well-trained staff which should enhance the:

- recognition of the value and service waste pickers add to the recycling chain;
- ease of access to the waste;
- negotiations for fair prices for the waste they collect;
- creation of safe spaces for working and storing; and

- the creation of systems, processes and structures through which the waste pickers can participate in the decision-making processes which may impact their livelihoods and well-being.

Recommendations

Many recommendations can be made on how landfills and the waste pickers working on them can be managed and controlled, but no “one fits all” approach is possible. It is therefore recommended that integrated and participatory processes be facilitated between each municipality, landfill management, BBCs and waste pickers to work out the best policies and practices to enhance the dignity of the workers and to benefit all role players. It would, in particular, be beneficial to facilitate people-centred and participatory processes to be able to plan and implement recycling and the diversion of waste from the landfills with the knowledge and expertise from also those at the lower end or coalface of the recycling value chain.

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