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Erasmus

**Examining the Roles and Challenges of Informal
Waste Pickers in the Solid Waste Management of the
Tamale Metropolis of Northern Ghana.**

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List of Acronyms

OECD	Organisation for Economic Co-operation and Development
3R`S	Reduce, Reuse, and Recycle
PPP	Public Private Partnership
ZL	Zoom Lion
LI	Lagislative Instrument
ECDs	Ecological Distribution Conflicts
PE	Political Ecology
EE	Ecological Economics
ISS	Institute of Social Studies
MSWM	Municipal Solid Waste Management
MSW	Municipal Solid Waste
USEPA	United States Environmental Protection Agency
MLGRD	Ministry of Local Government and Rural Development
ILO	International Labour Organisation
MWMA	Municipal Waste Management Authority

Abstract

The study is centred on the roles and challenges of informal waste pickers, specifically in their indirect contribution to Municipal waste Management. I have adopted power theory and concepts from the field of political ecology and ecological economics to highlight the roles and challenges faced by informal waste pickers. The research findings indicates that informal waste pickers are pivotal in the recovery of recyclable materials in the waste management front in the Tamale Metropolis. They constitute the source of raw materials to recycling industries. By so doing, they reduce the quantum of waste both on the streets and at landfill site. Whiles earning a livelihood, they contribute to urban ecological sustainability and resilience. The study further pointed out that informal waste pickers are socially marginalized and politically excluded despite their significant contribution in the waste management front. The numerous challenges they face is attributed to policy neglect. Though the thematic concern of the thesis is informal waste pickers, the study has delve into metabolism of waste and how it generates conflicts due to unequal distribution of environmental goods and bad. This is central to understanding the injustices that exist in the waste management front in the Tamale Metropolis.

Relevance to Development Studies

The study draws attention to issues of marginalities, exploitation, stigmatisation and exclusion in society, and specifically in the context of waste management in the Tamale Metropolis. This is relevant to Development Studies in that, making meaningful inputs in terms of policy interventions in institutional structures first and foremost requires understanding problems at hand. Thus, understanding the contributions of informal waste pickers and knowing their plight, forms a solid base for assessing the inequalities that exist in society. This makes room for formulation and implementation of policies that will benefit people evenly.

Keywords: Informal waste pickers, Municipal solid waste Management, Solid Waste, Tamale Metropolis, Ghana.

Chapter 1 : Introduction

1.1 Background of the Study

The quantum of waste produced in the world in recent times is unprecedented. Currently, waste production stands at 1.3 billion tonnes per year and predictably will increase to 2.2 billion tonnes per year by 2025 (Hoornweg and Bhada-Tata 2012a). Upsurge in waste generation is a common feature among low and middle-income countries globally (Hoornweg et al. 2015). Categorically, the management of waste in low and middle-income countries is characterized by incapacitated institutions who do not have the required technology and logistics among others to handle the enormous waste generated thereby culminating in environmental hazards that stems from improper waste management (Hoornweg and Bhada-Tata 2012a).

The waste hierarchy as part of interest in reducing waste generation has raised concerns about the use of finite natural resources. Recycling and reuse of materials are also part of the policy measures by the waste hierarchy (Rocha Perrupato-Stahl 2016, Abdul-Rahman and Wright 2014). Recycling has been identified as one of the key elements to sustainable and efficient use of resources. The Organization for Economic Co-operation and Development (OECD) builds on the 'principle of the 3R's (**reduce, reuse and recycle**) to emphasis the essentiality of sustainable and efficient use of resources (Studies, OECD Green Growth 2015). Despite the core nature of recycling to efficient and sustainable use of resources, the waste management systems of low and middle-income countries lack the requisite recycling technologies, strategies and infrastructure to handle recycling. Waste management systems in these countries are also without proper waste disposal and treatment sites. Waste collection is also noted to be irregular (International Waste Management Association 2015, Hoornweg and Bhada-Tata 2012a).

Amidst the absence of recycling in the formal waste management system, there is a system of recycling which contributes to waste management(Fahmi and Sutton 2006, Wilson et al.

2009). Recycling as a vital waste management component in middle and low-income countries is done by the informal waste pickers who earn a living through informal waste collection and recycling strategies (Wilson et al. 2009). Available literature reveals that informal waste pickers have chocked remarkable success in the recycling cycle of waste and in some countries and cities, they constitute the only source of recyclable materials to local manufacturing industries (Wilson et al. 2009, Fahmi and Sutton 2006).

However, it is pertinent to point out that informal waste picking is marked with social stigmatization and exclusion, deplorable working conditions child labor, and lack of recognition and socio-political protection from local authorities among others (Wilson et al. 2006a, Gerdes and Gunsilius 2010a). Integration of the informal waste workers into the formal waste management system has been the policy proposal for many waste management scholars (Medina 2007, Cointreau-Levine 1994). The policy proposals for integration is justified based on the jobs generated for millions of urban poor and the numerous contributions of the informal waste workers to efficient and sustainable use of materials through recovery and recycling (Gerdes and Gunsilius 2010a, Wilson et al. 2006a, Medina 2007).

In Ghana just like many other developing countries, the socio-economic significance of the informal waste workers cannot be underscored. However, the exclusion and neglect of the sector poses an oxymoron about its significance (Oteng-Ababio 2010). This research has critically explored the roles and challenges of informal waste pickers in the waste management system of the Tamale Metropolis of Northern Ghana. An alternative paradigm shift towards informal waste pickers will most likely cause policy change that will integrate and recognize the significance of informal waste pickers.

1.2. Statement of the Problem

The generation of solid waste is on the increase in Africa countries due to growing population size, urbanization, industrialization and consumption patterns. Waste generation in Africa is approximated at 0.5kg per person per day. Comparatively, this is not much as compared to the global North such as the United States of America where waste generation per person per day is estimated at 1.42kg, but what is problematic is the inappropriate management of this waste generated in African cities (Jaensson 2008, Hoorweg and Bhada-Tata 2012b).

Ghana is no exception in the struggles of African countries in the waste management front. Literature on quantification of waste has revealed that 0.51kg of waste is generated per person per day in Ghana. Indications are also that waste is generated more in the urbanized and industrial cities like Accra and Tema than other cities in Ghana (Miezah et al. 2015). The waste generation is projected to increase as economic activities and population increase. Just like many developing countries Ghana is battling with the improper management of this waste generated. There are attempts to curb waste hazards such as environmental pollution, health risk, city aesthetics and natural disasters (Oteng-Ababio 2010).

Historicizing waste management, it is pertinent to point out that managing waste in the early days was the sole responsibility of households in the context of Ghana. This is because waste was not in enormous quantities due to limited population sizes and less economic activities. With urbanization and associated increase in population size and economic activities, waste management became the primary responsibility of Metropolitan, Municipal and District Assemblies under the local government ACT 462 (Amoah and Kosoe 2014a). The shift in responsibility from the house holds to the public sector in Ghana is however, characterize with managerial inefficiencies(Puopiel 2010a).

It has been established in Ghana that, municipalities spend 20 percent to 50 percent of their revenue on waste management, in spite of this, 30 percent to 60 percent of the waste generated is left uncollected with a whopping sum of 70 percent of households relying on

improper waste disposal systems (Amoah and Kosoe 2014b, Atta Agyem 2013). Following the failure of municipalities to handle waste management efficiently and effectively there has been a paradigm shift; the government of Ghana in 1998 instituted the policy of Private public partnership (PPP) in waste management which allows for a contractual agreement with private companies to manage waste collection, treatment and disposal in the various cities (Amoah and Kosoe 2014a:115). However, research has it that the private sector of waste management in Ghana has failed in managing waste adequately and efficiently. This is contrary to the neoliberal belief in the effectiveness and efficiency of the private sector in service delivery (Asare and Frimpong 2013).

It is worthy to note that in the context of waste management systems in Ghana, there are land fill sites which are not properly equipped and structured for recycling, hence the waste management institutions in the formal sector do not engage in recovery of recyclable materials (Gugssa 2012). In the Tamale Metropolis of Northern Ghana, formal waste management is done mainly through public private partnership (PPP) with Zoom Lion as the private waste management company. Ideally Zoom Lion (ZL) should provide dust bins and skips for waste storage and subsequent collection and disposal at landfill site. The company does not engage in recovering of recyclable materials as it is not a primary objective to them (Puopiel 2010a).

Recovery of recyclable and reusable materials which is a key factor in successful and sustainable waste management is done mainly by the informal waste pickers. However, the contributions of informal waste pickers are not recognized and remains invisible in the formal narratives of ecological achievements within the waste management cycle in the study area. Informal waste pickers are challenged for lack of recognition and compensation for their contribution. Thus, the main objective of the research was to examine and highlight the roles of informal waste pickers in the Tamale Metropolis and how they are challenged. In view of the statement of the problem above, below are the research questions that guided the study.

1.3. Research Questions

1.3.1 Main Question:

How and what roles do informal waste pickers play in the solid waste management of the Tamale Metropolis of Northern Ghana? What are the challenges they encounter?

1.3.2 Sub-Research Questions:

How can the roles of informal waste pickers be recognised and recompensed?

How does power relations shape the invisibility of informal waste pickers?

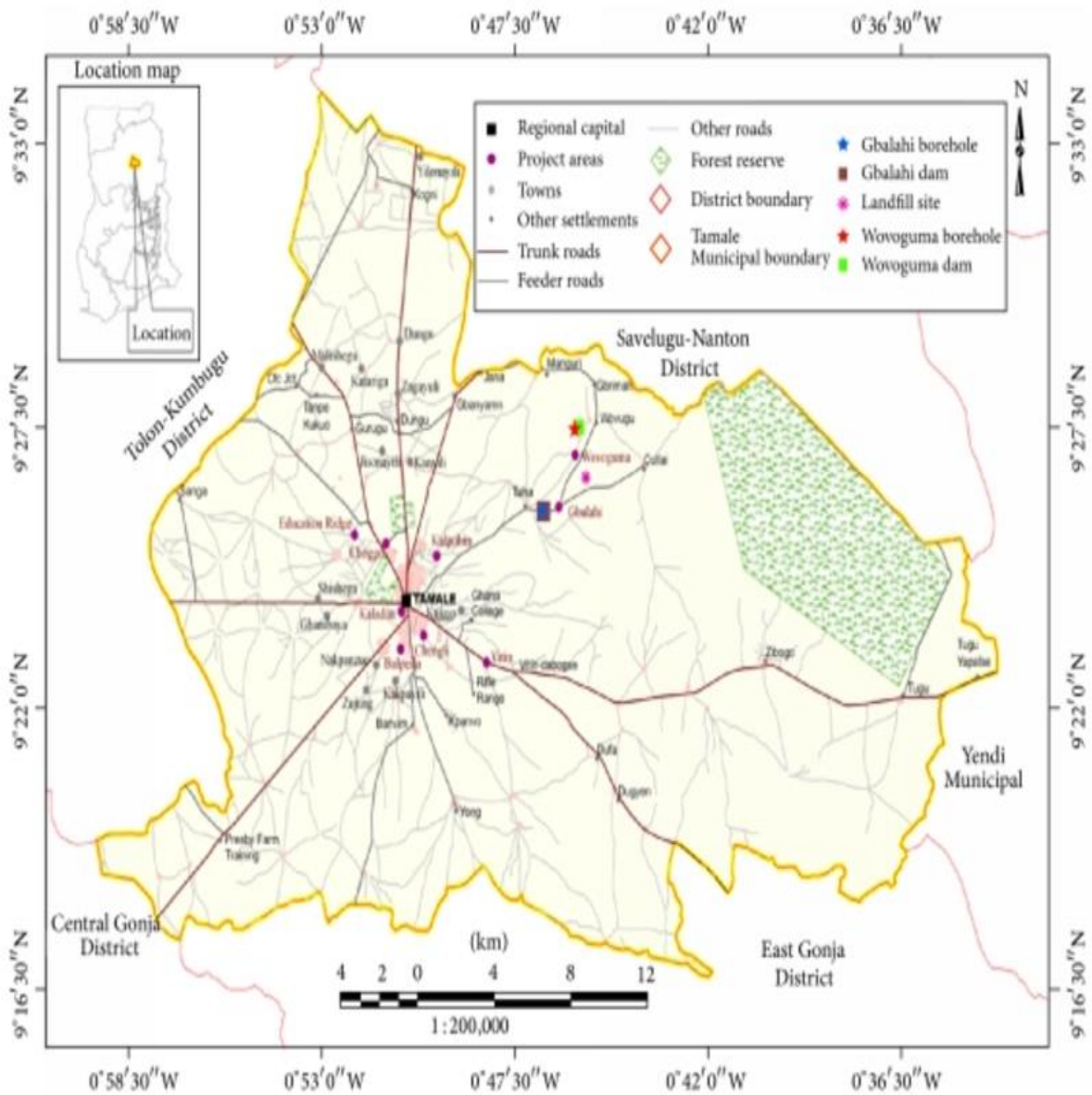
Under what circumstances does the social metabolism of waste result in social conflict in the Tamale Metropolis?

1.4 Methodology

1.4.1 Study Area

The study area is the Tamale Metropolis which is located at the centre of Northern Region. Tamale is noted to be one of the fastest growing cities in West Africa and it is the capital town of the Northern Region. Geographically, it shares boundaries with Savelugu and Nanton Districts to the North, Tolon and Kumbungu District to the west and to the southwest with the Central Gonja District. To the south, its boundaries is to the East Gonja District and Yendi Municipality to the East(Issahaku et al. 2014). There are sub-divisions of the metropolis which include: Tamale Central, Tamale North and Tamale. The study area was chosen purposively since previous literature on waste management in the area is based on the formal sector. This leaves a gap on informal waste pickers in the study area and makes them more voiceless and invisible. The study area covers 13 percent of the total land area of the entire Northern Region. It was elevated to the status of a Metropolitan Assembly in 2004 by legislative instrument (LI) 1801 of the local government Act 1993. The Metropolis has intercensal population growth rate of 3.5 percent (Puopiel 2010a:38). Analytically, population growth rate couple with the fact that the city is one of the fastest growing in Africa has an implication for waste generation rate since waste generation is associated with population growth, rapid urbanisation and increasing economic activities

Map 1-1 Map showing the study area



(Issahaku et al. 2014)

1.4.2 Qualitative Research Method

A recap of the research questions in the readers mind is necessary since these questions informed the qualitative method of research. The main question of this thesis is (a) how and what role do informal waste pickers play in the solid waste management of the Tamale Metropolis? Sub questions are: (b) how can the role of informal waste pickers be recognised and recompensed? (c) how does power relations shape the invisibility of informal waste pickers? and finally, (d) Under what circumstances does the social metabolism of waste result in conflicts? These questions are directly related to processes, experiences, social relations and require detail description, accounts and stories from research participants, hence, the thesis has chosen mainly qualitative research methodology (Weiss 1994, HUIJSMANS 2010).

This method makes room for probes, and further questioning if responses given by research participants are not clear enough. This research method also considered participants as subjects and not objects, hence led to collection of relevant data. Though the study method was largely qualitative, I conducted a small-scale survey among informal waste pickers for two reasons: one, I had an insight into how to categorise waste pickers and secondly it helped me to establish rapport with the waste pickers before the actual in-depth interviews. As argued by (O'leary 2004), the use of qualitative method of study does not amount to absolute exclusion of quantitative methods like survey when it can help in the richness of the data.

1.4.3 Participant Recruitment

The study population was broadly identified as informal waste pickers and key stake holders in environment and waste management in the Tamale Metropolis of the Northern Region of Ghana. The research population was later redefined to mean those who pick waste informally from the streets, transfer stations, households and landfill sites. The key stakeholders in waste management and environment were taken into consideration in this redefinition whiles not leaving out those affected by the final disposal and handling of waste at the landfill site.

Participants were recruited based on the purposive and snowballing technique; both non-probability sampling techniques since I aimed at “gaining a detailed understanding of a certain phenomenon in the context in which it occurs rather than that of statistical representation(Hennink et al. 2010:84). The purposive and snowballing sampling techniques were further useful in that waste pickers who were not at the landfill site were difficult to locate but the snowballing technique was helpful since informal waste pickers at one location easily pointed out where else I could find others. The number of participants with regards to informal waste pickers was guided by the principle of saturation; “that is the point at which the information you collect begins to repeat itself(Hennink et al. 2010:88). Purposively, two key informants each from the Environmental protection Agency, the Tamale Metropolitan

Assembly and the communities of Gbalahi and Kulaa were interviewed in addition to twenty-five informal waste pickers.

1.4.4. Ethnographic Field Work Approach

The justification for choosing the ethnographic approach is that I aimed at understanding informal Waste pickers from the insider perspective otherwise known as the emic perspective (Hennink et al. 2010:47). The ethnographic approach to field work enabled me to learn from the participants studied. Ethnography is not a research technique on its own, but embedded in it are other methods that can be made use of(Hennink et al. 2010:47). I integrated other methods such as, in-depth interviews, observation (participant and non-participant) and small-scale survey. Details of the mentioned research tools used are discussed in the next section.

1.5 Research Tools

1.5.1 Survey

Survey was the first research tool employed. I carried out a survey among twenty-five informal waste pickers within the Tamale Metropolis. But information on how, where and when to locate informal waste pickers was given to me by a waste trader who buys recyclable materials from the informal waste pickers. As earlier mentioned, the survey gave me an insight on how to categorise informal waste pickers within the metropolis. It also helped me in establishing rapport with the informal waste pickers before the in-depth interviews. The survey was accompanied with non-participant observation which arguably gave it an ethnographic orientation.

1.5.2 Observation

My first visit to one of the merchants who buys waste from the informal waste pickers gave me the opportunity to establish rapport with him. I explained the purpose of the research to him and consequently he noted that I could wait at his yard since some of the waste pickers will be coming to him with their daily pickups for sale. While I was with him, some of the Informal waste pickers arrived to sell their materials. This Was where I started observation. For the first phase of my Field work, it was all non-participant observation covertly. I observed how transactions are done and the relationship between informal waste pickers and merchants. From the streets to households and landfill site, I observed how informal waste pickers go about their work.

Though I aimed at understanding informal waste pickers from the insider perspective, the outsider perspective is equally important in identifying the silent practices and values of informal waste pickers (Hennink et al. 2010:171). In the second phase of my field work, I carried out participant observation with informal waste pickers both at the landfill site and the streets. Hammersley and Atkinson (2007:15) explains participant observation as “par-

ticipating in the social world, in whatever role and reflecting on the products of that participation". This time, I did it overtly since I had to assume a role in the work they do. I spent four to five hours on individual waste pickers on daily bases at this phase of the field work.

1.5.3 In-depth Interviews

The fourth and final stage of my field work took the combination of both in-depth interviews and observation. In all thirty-three participants were interviewed. The breakdown is, two key informants each from the communities of Gbalahi and Kulaa, two key informants from the waste management department of Tamale metropolis and Zoom lion and twenty-five informal waste pickers. The interviews were ethnographic oriented among both key informants and informal waste pickers. Whiles some interviews with informal waste pickers were conducted in chop bars whiles we had meals, most key informants were interviewed either at home or in the office in the form of informal conversation and with unstructured questioning though with the support of an interview guide.

1.6 Positionality and Reflexivity

Positionality involves the researcher's position in terms of Power relations including economic status, educational background, social status, gender, age, nationality and urban rural relationships among others and the influence (whether Negative or positive that this may have on the data collected and subsequently, the knowledge produced(Rose 1997:308). Reflexivity in relation to positionality implies the way we get to know and how we account for our positionalities in terms knowledge production (Hammersley and Atkinson 2007:15).

On one hand, my positionality as a Ghanaian, coming from the Northern region, understanding the language of the native informal waste pickers and bearing certain physical features facilitated data collection. Establishing rapport and social interaction with native informal waste pickers was much easier. Hence, this positionality had a positive impact on data collection. On the other hand, dealing with informal waste pickers who were migrants

from neighbouring countries and do not understand the same language with them was problematic as it posed a language barrier, making social interaction hectic. The use of a translator who was one of the migrant informal waste pickers and stayed in Tamale for as much as one decade did help but his positionality as an informal waste picker had an impact both negatively and positively on the data collected. On the positive side, the language barrier was overcome and social interaction became smooth. Moving with him made all other informal waste pickers see me as one of their kind who will not cause problem for them.

On the other hand, being one of them probably influenced the way he interpreted the messages since he has experience himself in this phenomenon, hence the interpreter's positionality as an informal waste picker could result in presuppositions. For migrant waste pickers, my positionality as a Ghanaian gave them a strong signal that I was investigating them to have them expelled in the system but eventually, they understood the purpose of the research with the help of my research assistant. For native informal waste pickers, my status as a Masters student from Europe made them entertain the feeling that I could be bringing better opportunities to their door stairs and this probably influenced the responses and hence the data collected and knowledge produced. My own familiarity with the state of informal waste pickers leads me not to exonerate my presuppositions in the knowledge production. This resonates the view of Bourdieu(1996:287) who argue that "nothing is more false in my view than the maxim almost universally accepted in the social sciences according to which the researcher must put nothing of himself into his research".

Pertinent to the issue of positionality and reflexivity is the informal ethnographic oriented interviews I carried out with some key informants. Being a Master's student and talking to Directors and managers of institutions involved some power relations as I could not get clear information on certain issues. I was not allowed to talk to anybody beyond the manager and assistant in the landfill site waste management group. This undoubtedly affected data collected negatively as certain probes did not yield desired responses.

1.7 Data collection

Data was primarily collected through mediums such as, voice recording during interviews, writing field notes and pictures. Interviews were recorded when allowed or field notes taken when voice recording was not allowed. Interviews with informal waste pickers who I could not understand their language were translated to me through a translator and I recorded or write field notes where appropriate. Field notes were also written based on observations. However, where participants were not too comfortable with me when I took field notes right at the point of observation, I desist from writing and only observe to do the writing later right after the field when observations were fresh on my mind.

1.8 Data Analysis

My approach to data analysis was based on the principles of grounded theory. The grounded theory is based on the inductive methods of developing codes. However, it is widely acknowledged that qualitative researchers also make use of deductive approaches to data analysis(Hennink et al. 2010:204). Thus, I have largely employed the inductive method which makes use of data collected to generate codes for subsequent analysis but that notwithstanding, there is an interplay between the inductive method and deductive method in the data analysis. Among other reasons key to the selection of the grounded theory approach is the fact that its “association with the interpretative paradigm does not stop it from subtly merging features of two traditionally contrasting epistemological approaches which makes it stronger and appealing”(Hennink et al. 2010:207). Thus, the grounded theory embraces both scientific rigour and the interpretative paradigm to data analysis. As mentioned above, the data analysis was guided by the grounded theory and took a cyclical rather than linear process. The data collected was organised and analysed taking into consideration the analytic task of preparing verbatim transcripts, anonymizing data, developing codes, describing, comparing, categorising, conceptualising and developing theory. The list of guiding principles Were not a check list that was followed but rather a set of Useful tools that were used simultaneously in the data analysis Process(Strauss and Corbin 1998:xi).

Analysis were largely based on the inductive process where concepts and theories were derived from the data set. However, there was some implicit use of deductive concepts and codes based on existing literature and theory. Hence, theory building in this work is based on the “interplay between existing theory and inductively derived empirical theory to develop new explanation or transform and refine pre-existing theory”(Hennink et al. 2010:210). Code development was well grounded on the data collected. Coding was also carried out sequentially and validated for consistency. The codes were also developed based on the principle of saturation; thus, I stopped coding when I could no longer realise new issues.

1.9 Ethical Considerations, Dilemmas and Limitations

First and foremost, formal permission was sought from the Tamale Metropolitan authorities to carry out the research in the metropolis. It was not a smooth process seeking permission from the authorities as I went through lots of bureaucratic process to have my application for permission approved. The delay in approving my application was based on the suspicion that I might be a journalist who is seeking to investigate the waste Management Department of the Metropolis. The process of getting permission delayed than expected and eventually affected the time line I drew for my field work period. The ethical consideration of getting formal permission was accomplished but under a delayed and bureaucratic circumstances in which someone I personally know had to introduce me as a student before I had my way through; showing my introductory letter from the ISS was not enough. This whole process got me going to the office of the metropolitan authorities several times till my application was approved.

In line with ethical considerations, I also introduced myself to the study participants as a masters student in the Netherlands embarking on a research as part of requirements of my academic work. I explained the rationale of the study to the participants and made them understand that participation was voluntary and they could withdraw at any time if they wish to do so. I assured them of anonymity of identity and confidentiality of data. I also sought the consent of participants before recording and taking photographs at the field. In

a related point, names attached to quotations of interviews are not real names of the participants. This is important for confidentiality purpose.

Despite disclosing the objective of the study to informal waste pickers, they could not help but express their expectation for benefits by instantly asking for protective wear like gloves to do their work. I had to meet this demand, though under pressing financial circumstances. Not wanting these demands to continue, I reminded them the purpose of the research and resolved this challenge by letting them understand I will compile recommendations based on the outcome of the research to let the metropolitan authorities know their situation and possibly intervene. Other challenges included not being allowed talk to workers of the land fill site management group aside the top management. I could not figure out what they could Possibly be hiding from me after knowing that the research is largely for academic purpose.

Another challenge was Language barrier between me as the researcher and the non- native or migrant waste pickers who could neither understand English nor speak Dagbani. This challenge was resolve when I had a waste trader who was also of the same tribe as the informal waste pickers who were migrants and understood both English and Dagbani. Finally, at the landfill site, it was difficult convincing informal waste pickers that the purpose of the research is purely academic since according to them several other researchers have spoken to them and assured them of help of all sorts but end up being false promises. It took me extra explanations for them to understand that I was only carrying out research for academic purpose. The absence of documented or secondary data on informal waste pickers was one serious limitation to the study. Neither the metropolitan assembly nor the Environmental Protection Agency (EPA) could provide data on informal waste pickers in the metropolis; this narrowed my research to only primary data thereby reducing the richness that secondary data would have added to the study.

1.10 Structure of the thesis

Chapter one of the thesis consist of the background and problem statement; waste generation and inefficiency in managing it is highlighted in this section. I have introduced the informal waste pickers by pointing out the vital role they play in the waste management front. In this section, I have also presented a methodology indicating how the research was carried out.

Chapter two is made up of relevant literature on waste studies and waste picker`s role in waste management in developing countries. I have also captured waste legislation context specific to Ghana, indicating how informal waste pickers have been left out in terms of waste policy in Ghana. Chapter three is made up of the theoretical framework that underpins this study. This is made up of power theory and concepts from PE and EE. Whiles EE and PE highlights the role of informal waste pickers and conflicts of waste metabolism, power theory highlights the exclusion of informal waste pickers in various decision making processes. Empowerment is used to buttress waste pickers call for policy attention. Chapter four is made up of findings and analysis whiles chapter five is the conclusion of the study.

Chapter 2 : Conceptual and Theoretical Frame Work

In order to critically analyse the research findings based on the questions, I have engaged with theories of **power** and **empowerment**. I have also engaged with Concepts from the field of Political Ecology (PE) and Ecological Economics (EE). Under Political Ecology, I have engaged with concepts such as **Ecological Distribution Conflicts**. In the case of Ecological Economics, I have used **Social Metabolism and Cost -shifting** as relevant concepts to the problem of study.

2.1 Power and Power Relations

There have been scholarly debates on the precise definition of power. Some explanations focus “on the ability of one person or group to get another person or group to do something against their will”(Rowlands 1997:9). In this case, power is also described as ‘Zero-sum` the more one person has, the less the other has(Rowlands 1997). It is asserted that this power is seen at all levels ranging from households to communities, groups and nations. Rowlands (1997) has categorised power into four forms which include: Power over, power to, power with and power from within. Understanding and operationalising these forms of power is useful in the context of waste management, waste trade and informal waste picking in the Tamale Metropolis.

- **Power Over:** This category of power involves the ability to influence and coerce the decisions and thoughts of the powerless. In other words, it is the ability to influence, shape or determine someone else’s wants. Power here is seen as wielded by people or groups who dominates and can be bestowed by one person on another. It is viewed as a ‘zero-sum` and one can only gain it by taking it from another person.

- **Power to:** This has to do with generative or productive power which brings about new possibilities and actions without domination. It can simply be explained as power to organise and change existing structures
- **Power with:** This has to do with seeing the `whole` as more greater than the sum of individuals. This can be seen from the perspective of increasing power from collective action, social mobilisation and alliance building.
- **Power within:** This has to do with the strength and uniqueness in us that makes us feel truly human. It leads to accepting and respecting oneself which also amounts to respecting and accepting others. It involves increasing individual consciousness and self-dignity and awareness.

The explanation of the categories of power above is intertwined with the concept of empowerment. Understanding the categories of power above have implications for understanding empowerment which is the next concept of discussion.

2.2 Empowerment

Empowerment implies a sense of self and individual confidence and capacity, and undoing the effects of internal oppression (Rowlands 1997). Empowerment has its roots in power and the struggles and debates on what power means has extended to empowerment; hence the meaning of empowerment is contested among scholars and organisations (Rowlands 1997). From the `power over` perspective, "empowerment involves bringing people who are outside the decision making process into it" (Rowlands 1997:13). Thus, this definition of empowerment focus on participation in political process and decision making. From this view, individuals are empowered when they are able to fully utilize opportunities around them without any hindrances. From the perspective of `power to` and `power with`, empowerment is explained as the process by which groups or individuals get to know of their interest in relation to the interest of others in order for both to participate strongly in decision making process and to influence such decisions (Rowlands 1997).

Empowerment is said to be operating in three different dimensions, that is: **Personal empowerment** which involves developing a sense of individual confidence and capacity and undoing the effects of internal oppression. The second dimension is **relational empowerment**; it involves the ability to negotiate and influence the nature of relationship and the decision making within that relationship that exist. The last dimension of empowerment has to do with **collective empowerment**. It involves the abilities of groups to work together to arrive at more fruitful results than each could have done. Below is a tabular presentation indicating the implications of the various forms of power relations to empowerment.

Table 2-1 Indication of the power and empowerment nexus.

TYPE OF POWER RELATION	IMPLICATION FOR UNDERSTANDING EMPOWERMENT
POWER OVER: Ability to influence and coerce	Changes in underlying resources and power to challenge underlying assumptions.
Power to: organise and change existing hierarchies.	Increased individual capacity and opportunities for access
Power with: Increase power from collective action	Increased solidarity to challenge underlying assumptions
Power from within: Increased individual consciousness	Increased awareness and desire for change

Source: (Rowlands 1997)

The theory of power and empowerment as described above are used in the findings in relation to the research questions to analyse the following: First and foremost, power is used to analyse the relationship that exist between informal waste pickers and other actors in the waste trade in Tamale. Secondly, power is used as an analytical tool to explore the decision making process that

leads to the marginalisation of informal waste pickers. Additionally power is conceptualised in the political Ecology lens to look at the idea of cost shifting from the core to the periphery. Lastly, empowerment as a concept forms the analytical tool for recognising and compensating the work of informal waste pickers.

2.3 Political Ecology

Political Ecology (PE) is explained as a “confluence between ecologically rooted social science and the principles of political economy” (Henry et al. 2006a, Peet et al. 2010:6). Blake and Brookfield (1987:17) have also explained that the phrase ‘political Ecology’ “combines the concerns of ecology and broadly defined political economy. This encompasses the constantly shifting dialectical between society and land based resources and also within class and groups within society”.

According to Martinez-Allier,(2009a:2) PE involves the “study of ecological distribution conflicts; that is conflicts on access to natural resources and services and on the burden of pollution”. He further explains that environmental conflicts arise based on the burdens of negative environmental impacts such as pollution caused by uneven power relations and distributions in the national, international and global context (Martinez-Alier 2009b).

According to Bryant and Bailey (1997), in the practice of PE, three fundamental assumptions should be taken into consideration. These assumptions include: environmental cost and benefits which are heterogeneously experienced within societies. This heterogeneity can be attributed to differences in political, social and economic standings.

Secondly, there is an unavoidable reinforcement of existing social and economic inequalities caused by this unequal distribution of cost and benefits associated with environmental change. The above explanation matches the definition of PE as the study of ecological distribution conflicts; which implies the struggles over access to natural resources and other negative environmental impacts like burdens of pollution (Martinez-Alier 2003a)

2.3.1. Ecological Distribution Conflicts (EDCs)

The concept of Ecological Distribution Conflicts has its roots traced to economist like O'Connor et al. They explained EDCs as emanating from unequal distribution of environmental cost and benefits as well as struggles over access to and control of natural resources (O'Connor et al. 1996). Among this environmental unequal distribution of cost and benefits includes the burden of pollution and other environmental negativities resulting from interaction between nature and humans in an environment of politically unequal distribution of power. It has been pointed out that EDCs of environmental cost and benefits is not limited to only economic components of the distribution bid but covers other essentialities.

EDCs can take local or global shapes. Globally, EDCs can take place between developing and developed countries e.g. the environmentalism of the Intag community against mining companies from Canada and other countries of the global North. EDCs may also take a local dimension such as the struggle over access to waste in Delhi following the introduction of waste to energy production and the privatisation of the waste management system (Schindler et al. 2012a). EDCs is interlinked with other fields and concepts such as environmentalism of the poor and environmental justice associated with experience of environmental racism in the United States (Bullard 1993).

It has been asserted that EDCs are also generated from the increase in social metabolism where powerful actors in society shift cost other words known as externalities in mainstream economics to the less powerful and vulnerable groups in society (Martinez-Alier 2003a). Polanyi and MacIver (1957) have noted that in the quest to protect nature and humans, there are opposing movements against the expanding frontiers of capitalism.

Different groups of people have different valuation languages which they use against the unquenchable thirst of capitalism to expand its roots to all parts of nature for purposes of profit making. Martinez-Alier et. al (2010) has traced the origin of conflicts not only to

inefficiency in governing bodies and institutions but also to the capitalist system of economy which has a desire for more and more inputs from the commodity frontiers with the consequence being inevitable waste generation. The social cost of the waste generated is then shifted by the powerful to the weak and vulnerable in society. Conflicts may also occur in the commodity chain process including the final disposal of waste (etjatl.org). I have contextualised EDC'S to the burdens of pollution in waste management and final disposal of waste in the Tamale Metropolis in the discussion of the findings.

2.3.2 Conceptualisation of power and Power Relations in PE

Urban political ecologists assert that metabolic processes cannot be comprehended without taking into consideration the institutions that govern and determine the social relations of production, division of labour and distribution of resources (Swyngedouw and Heynen 2003, Heynen et al. 2006). Implicitly, governing institutions have significant influence in configuration and reconfiguration of metabolic flows. Similarly governing institutions wield power in determining the relations of production and division of labour through labour laws.

Bryant (1997:11) has noted “that the relationship between actors (i.e. states, business, non-governmental organisations, farmers etc and the line between actors and the links between the physical environment are conditioned by power relations. Those relations are highly unequal in so far as different actors bring to bear different power capabilities in struggle over access to environment and resources” Analytically, this assertion seeks to suggest that, power relations play a key role in determining who gets what in the competing struggles to various interests in the environmental and commodity front.

Bryant has also highlighted that in the context of power relations, powerful actors could have control over the environment of the weaker ones. “The control over the environment of others is also reflected in the power to pollute that environment, thereby adversely affecting the health or livelihood prospects of other actors (Bryant 1997:11). Bryant has

also indicated that in most cases, “the state and other powerful actors seek to maintain or enhance their power over the environment of others by controlling the ‘public transcript’ -that is, the socially accepted version of events represented in public documents”(Bryant 1997:12). Thus being able to influence the location of a polluting scene like landfill site reflects taking control over that environment.

Additionally, viewing power relations from the UPE perspective, the urban environment is seen as a ground of unequal power relations with those in power taking decisions based on their own interest. The interest and views of the poor are excluded and marginalised (Heynen et al. 2006). Thus, the question of who makes decision and who has access to the decision making process is critical to understanding exclusion of the less powerful actors in urban space. Power relations is contextualised in the findings to portray how waste pickers are challenged due to lack of administrative and governing policies covering their welfare and interest. Power relations is also used in showing how powerful actors have taken control of the environment of the weak and vulnerable.

2.4 Ecological Economics (EE)

Ecological economics is an integrated discipline with the taught of improving and broadening the scope of economics theory to encompass not only the earth’s natural system, but also, the values, ethics and total well-being of humans. It has been described as “an interdisciplinary research agenda to explore alternative paradigm(Spash 1999:415). Unlike mainstream economist which seeks to improve on the goods and services produced by humans as well as the Gross Domestic product (GDP) all of which are measured in monetary values, EE deals with the contradictions between increasing positive economic growth and adverse environmental results(Spash 1999).

The broad areas covered by Ecological Economics encompasses areas such as trade and globalisation, environmental sustainability and well-being, impacts of economic growth on the environment, trade and globalisation(Alier and Röpke 2008). Breaking down the

broader **scope**, Ecological Economics covers thematic areas such as; the relationship between the environment and growth, social metabolism and cost-shifting among others (Röpke 2005). Areas which are of importance to this thesis include but not limited to **social metabolism and cost-shifting**. Social metabolism is used in to illustrate the role of informal waste pickers while cost-shifting is used to highlight the distribution of environmental goods and bad in the waste management cycle of the Tamale Metropolis.

2.4.1 Social Metabolism

Social metabolism is explained as the way societies shape the increasing interflow or exchange of energy and materials with the environment (Fischer-Kowalski 1998, Martinez-Alier 2009b). Other scholars like Scheidel and Sorman (2012) have also explained social metabolism as the energy and material input and output that flows in the economy. The metabolic process involves the apportionment, transfiguration and disposition of material and energy by human societies in order to ensure sustainability or continuous evolution.

Fischer-Kowalski (1998) has done a simple analogy comparing the study of human metabolic system by biologist to how Ecological Economist study the material input and output in the economy and how these material flows are shaped to ensure continuous evolution of human societies. Demaria and Schindler (2016), asserts that society's metabolism has both material and immaterial dimension; the former being the composition of materials and energy the society consume and the latter being the institutions and political economy in the metabolic sphere. Both the material and immaterial dimensions are pertinent to understanding waste management in the study context.

2.4.2 Role of Informal waste pickers from EE Perspective

As it happens in the natural ecosystem, decomposers that is both physical and chemical, play a crucial role in sustaining the metabolic system. Similarly, from the lens of Ecological Economics, in human societies, as part of which is industrial processes, recyclers play the role of physical decomposers by turning materials which is termed as waste into industrial raw materials that is fed on to the industrial production process thereby promoting sustainability. The role of informal waste pickers is thus linked to social metabolism. The discussions below throw more light to the above analogy.

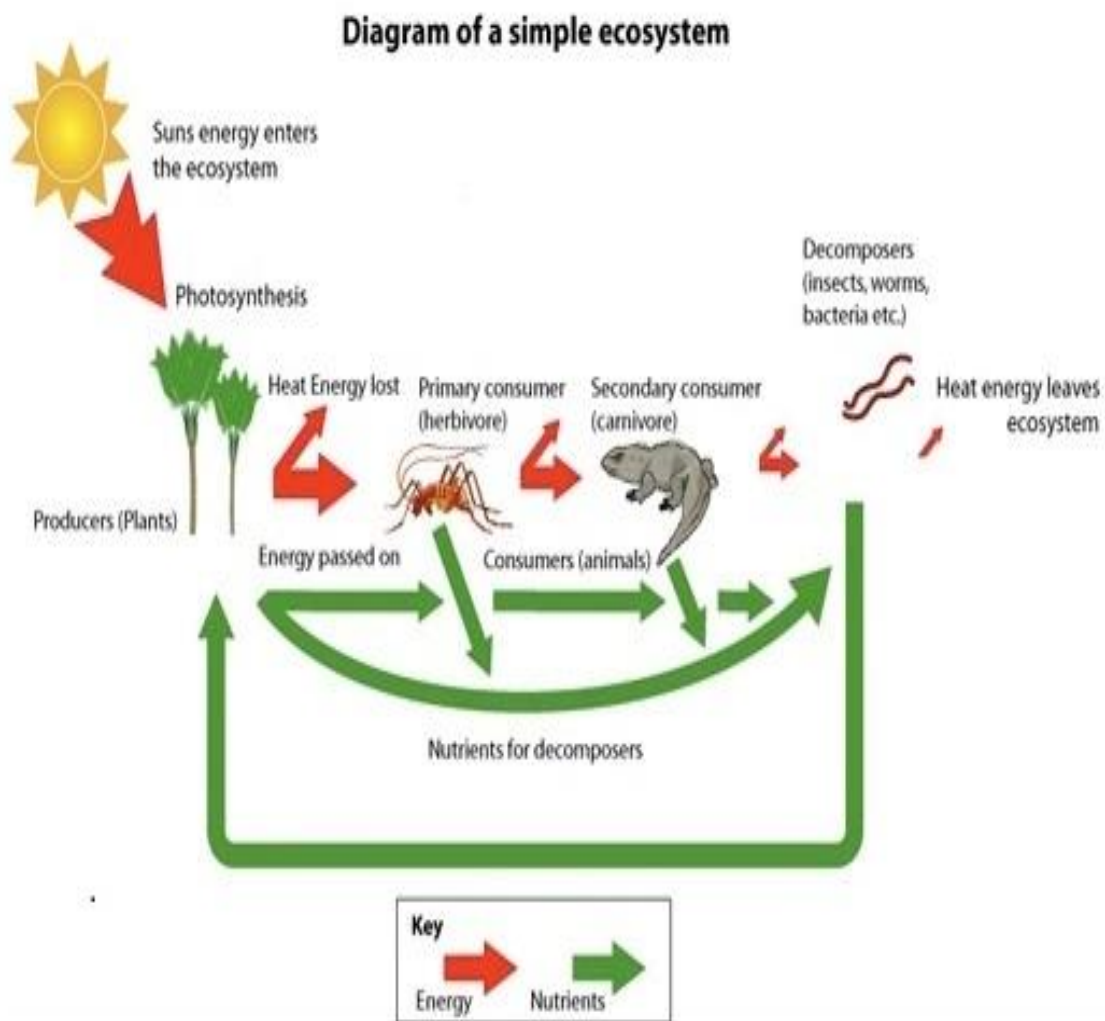
2.4.3. Cyclical Nature of the natural Ecosystem

Energy needed to ensure change in the natural ecosystem is solely derived from the sun. The changing of solar energy into chemical or mechanical energy for purposes of sustainability of plant and animal life needs one material process. The natural cycle of fusion requires five chemical components; that is, sulphur, carbon, nitrogen, water and phosphorus (Ricklefs and Miller 2000). Living things in nature move matter around in a cyclical manner; all living things in the natural ecosystem are classified either as decomposers, consumers or producers depending on their roles (Moberg and Folke 1999). Some organisms take sunlight as the only source of energy. These organisms form molecules made up of simple nutrients from air and soil. These category of living things are called producers. Example of producers in the ecosystem is green plants (Demaria 2017:43). Similarly, some animals feed on other animals or the dead matter of plants; these animals in the cycle are called consumers. Consumers depend on other organisms for their nutrients and energy.

The third and last aspect of the cycle is made up of the decomposers; namely bacteria and fungi which break down the output of consumers and producers. This chemical and physical breakdown then bring back nutrients to the producers and consumers. That is they bring back nutrients into the material cycle (Demaria 2017:43). Decomposers depend on producers for their chemical energy. Categorically, “decomposers can be classified into two; that is chemical and physical decomposers. The physical decomposers are animals (scavengers) who eat the organic matter from dead plants. By eating, they break them into smaller

pieces. Subsequently, chemical decomposers intervene by breaking down the materials into its chemical composition that becomes nutrients for producers in the natural cycle” (Demaria 2017:43). In the transformation cycle of the natural ecosystem, all matter stay closed cycles while heat is emitted into the space(Demaria 2017:43). Below is an illustration of the cyclical nature of the natural ecosystem.

Figure 2-1 illustration of the natural ecosystem



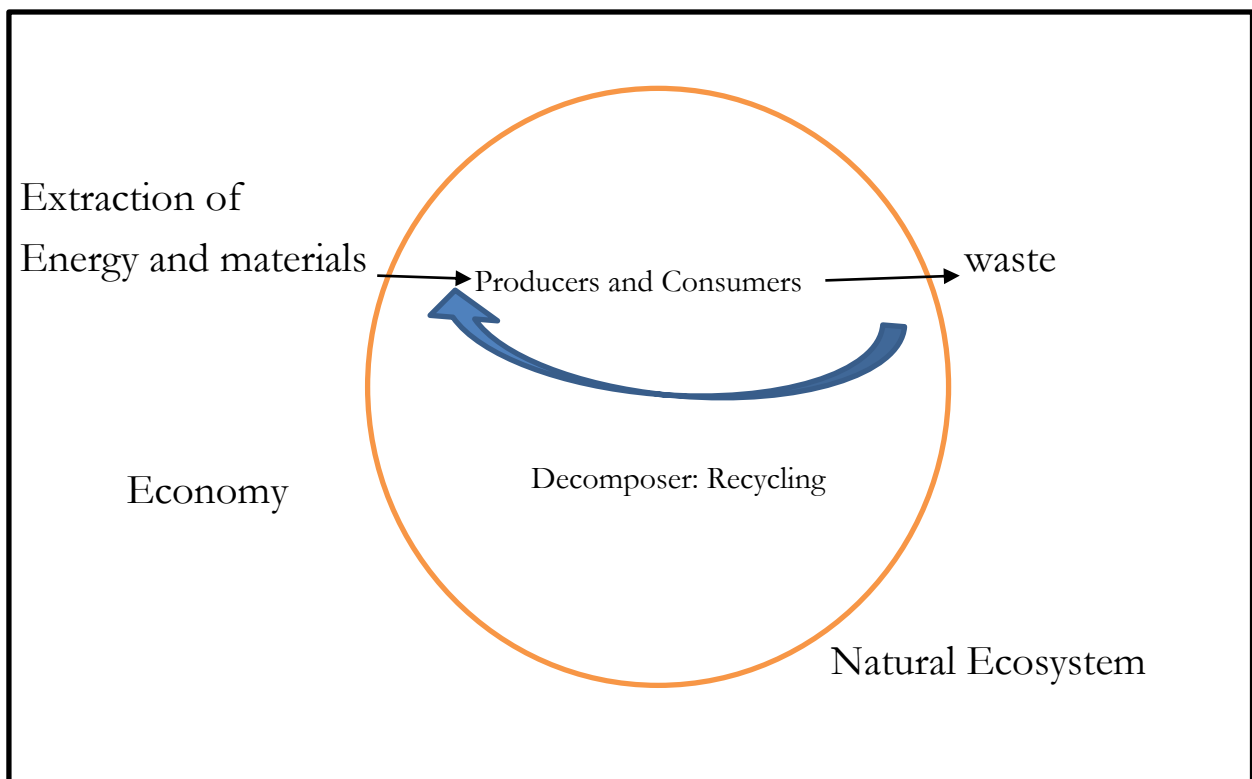
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source: (www.sciencelearn.org.nz)

2.4.4. Human Societies

As evident in the illustration in figure 2.1 above, with the natural ecosystem, the output of one process becomes the input for another there by paving way for sustainability in nature. It has been asserted that this cyclical process in natural ecosystem is lacking in human societies (Demaria 2017:44). Recyclers in societies play the role of chemical decomposers. Informal waste pickers who put together recyclable materials and sell to recycling industries can be called physical decomposers in the metaphorical sense. This is because they turn what could be termed as `waste` into raw materials for recyclable materials. This is illustrated in figure 2.2 below.

Figure 2-2 Relationship between the ecosystem and the economy: a linear process



Adopted from: (Demaria 2017)

2.4.5 Cost Shifting

Kapp (1963) has argued that externalities are synonymous to successful cost-shifting. He has pointed out that externalities are cost-shifting in a nut shell. Cost is shifted from business entities to others. Implicitly, externalities are not market failures but an intentional act

of shifting cost to others in order to make profits. He explained social cost to mean cost that is incurred by the activities of business but this cost is suffered by others rather than the source from which the cost emanates. In other words, social cost is suffered by third parties either as individuals or as a community. Kapp refutes the idea that externalities are minute problems as mainstream economist seek to suggest. He further disagrees with the idea that externalities are accidental (meaning the consequences of the activities that cause the social cost are unintended). He argues that social cost is regular to the activities of business entities.

He has also highlighted the fact that social cost caused by business to communities or other third parties are regular and common and not occasional. Building on this argument by Kapp, Martinez-Allier and O'Connor (1999) have also put forward that externalities are not due to the inability of markets to internalise social cost but rather a successful system of shifting cost based on power relations. Kapp added that social cost that involve air and water pollution are detrimental more than just shifting cost, but rather they change the natural state of the environment; thus for political ecologist, social cost such as water and air pollution cause the existence of a new "socio-nature" that is an artificial environment (Swyngedouw and Swyngedouw 2004). All in all, contrary to mainstream ideas, Kapp has noted that Cost shifting by business entities to communities and vulnerable or weak people in society is regular and Pervasive rather than accidental and unintended (Swaney et al. 2006). I have contextualised cost-shifting in findings to indicate how the social cost of waste is shifted to the communities located close to the landfills of waste management. I have also argued in the findings that cost of recovery of recyclable materials is shifted to informal waste pickers.

Chapter 3 : Literature Review

This section is made up of literature review on Municipal Solid Waste Management (MSWM). Pertinent in the waste management strategies is recycling which is partly the role of informal waste pickers in the study context. I have also presented waste legislation in Ghana and argued that informal waste pickers are excluded in waste policies. Finally, I have presented literature on the role of informal waste pickers in the developing countries with the aim of bringing out the relevance of waste picking to MSWM and other aspects of life such as economic value of waste picking to livelihood. I have also calls for integration of informal waste pickers into the formal Waste Management systems.

3.1 Waste and its meanings

According to Gourley (1992), it is much easier to identify waste than to define it. However, he explained that an item becomes a waste when it can no longer be utilized by the one who owns it. That is, when it ceases to fulfil the purpose for which it is acquired. From Ecological Economics perspective, waste is seen as “the output of social metabolism in all its forms: liquid, solid and gas” (Demaria 2017:33). In basic categorization, waste is put into two: that is, solid and liquid waste. The focus is on solid waste and more specifically municipal solid waste which is discussed in subsequent sections.

3.2 Waste Generation

Generation of waste involves activities or stages in which items are declared as no longer useful and are therefore discarded. Waste generation is notably on the increase in developing countries (Demaria 2017:35). According to the world bank (2012), in 2002, averagely, global waste generation was 0.64kg of MSW per person per day. This has been projected to increase to 1.42kg per person per day by the year 2025 (Hoorweg and Bhada-Tata 2012c). In line with this, Mensah and Larbi (2005) have also asserted that waste generation in Ghana as a developing country is on the increase.

3.3 Municipal Solid Waste (MSW)

According to Hoornweg & Bha-Tata (2012a:119), municipal Solid waste (MSW) “is defined to encompass residential, industrial, institutional, commercial, municipal, construction and demolition waste”. Jaensson (2008:7) has also discussed that municipal solid waste is generated by households, though similar waste from sources such as commerce, office and public institutions are included. This waste generated is collected either by the authorities of the municipalities or on behalf of the municipalities. Whatever the disparities in the source and types of municipal waste might be, the commonality is on the solidity of these waste identified.

3.4 Municipal Solid Waste Management (MSWM)

Municipal solid waste management “encompasses the functions of collection, transfer, resource recovery, recycling and treatment” (Henry et al. 2006b:93). The main purpose of MSWM is to protect the health of people, enhance environmental quality, promote sustainability and ensure assistance and facilitation of economic productivity. (Henry et al. 2006a).

In a closely related view, Tchobanoglous (1993a:7) has define MSWM to mean “...that discipline associated with the control of generation, storage, collective transfer, transport process and disposal of solid waste in a manner that is in accordance with the principles of public health, economics, aesthetics and other environmental considerations that is responsive to public attitudes”.

It has been indicated that waste is increasing in volumes with raw materials diminishing in quantities (Mining 2015:1). The EU has rolled out the waste hierarchy concept which guides policies on waste management. The waste hierarchy has rated waste management plans according to their implications for the environment (UNEP, 2015:31). In the preferred

ranking, reduction of waste generation is prioritised. Another of this kind that has been considered strongly is the reuse, recycle and recovery strategies (3rs). Landfill and controlled disposal are at the bottom of the pyramid (UNEP ,2015:31). Another critical aspect that has been considered is the integrated solid waste management system which includes collection, recycling, recovery and disposal. The waste hierarchy has also entreated commitment on the part of stake holders, waste collectors, waste generators and political institutions in the waste management front (Marshall and Farahbakhsh 2013:1).

3.4.1 Contemporary Practices In Managing MSW

In modern times, managing of municipal solid waste has taken a different trend form the olden practices. The methods involved in managing MSW in contemporary times include; incineration, sanitary landfills, composting and recycling (Denison and Ruston 1990)

3.4.2 Incineration

Incineration involves a controlled burning/combustion of combustible waste. This method reduces combustible waste to non-combustible state. CO₂, vapour and water are the by-products of incineration. It has been pointed out that incineration reduces the volume of waste as much as nine times as compared to any other methods. Through incineration, useful energy can be recovered in the form of energy or steam. Adversely, the disadvantages associated with incineration has been pointed out as environmental pollution due to emission of CO₂ and relatively high cost of operation(Kreith and Kreith 1999).

3.4.3 Sanitary Landfill

Landfills are noted to be the most oldest and commonest form of waste disposal(Zerbock 2003). According to the centre for Environment and Development 2003, sanitary land filling involves confining, compacting and covering waste with soil through the use of various waste management equipment. It has been pointed out that landfills could be equivalent to open dumps except that landfills are planned, engineered and managed administratively (Zerbock 2003). Landfills are classified as necessary evils because they are needed in com-

ination with many other methods for better waste management. They also absorb materials that can no longer be recycled. But it also has negativities such as pollution of ground water through leaching if not handled properly, it also has high maintenance cost and construction(Kreith and Kreith 1999:28).

3.4.4 Composting

Composting has been explained as the biological decomposition of organic waste in controlled condition so as to create a nuisance free storage that is suitable for use in agricultural production. Zebrook (2003) has asserted that decomposition is one of the low technology approaches to waste reduction especially in developing countries where most 50% of waste is made up of organic materials.

3.4.5 Recycling

Recycling is explained as the process by which waste materials is converted into new and usable materials (Demaria 2017:41). According to the United States Environmental Protection Agency (USEPA) recycling has been identified as a key and efficient element to effective waste management. Recycling turns recyclable materials which are classified as waste into valuable and useful materials.

Recycling has several advantages such as conservation of the environment, prevent pollution, promotes economic expansion and reduce the quantum of waste that is thrown away. Several materials such as plastics, metal, glass and paper can be processed to become valuable again. Other advantages of recycling include; saving land fill space and transport of waste (USEPA 1999). It has also been asserted that recycling helps return raw materials to the market through segregation of waste in which the reusable materials are separated from the municipal solid waste. Reuse and recycling leads to minimization of extraction of new raw materials(Kreith and Kreith 1999). However, recycling if not well handled can have negative implications for the environment aside its high operation cost (Demaria 2017:42).

Additionally, the fourth law of thermodynamics indicates that complete recycling is impossible due to physical degradation of material resources when put into the physical economy (Georgescu-Roegen 1975).

According to Tchobanoglous and Kreith (2002) there are three main ways of recovering recyclable materials from MSW. These methods include; generators of waste separate recyclable materials or collectors of waste separate recyclable materials from source of collection. Another way is that mixed MSW is collected and processed to recover recyclable materials. Lastly, mixed recyclable materials are collected and separated at the facility of processing. These methods are more pronounced in developed countries, however, in the case of developing countries of which Ghana is not an exception, recovery and recycling is done mostly by the informal sector (Medina 2008). The informal sector of waste recovery and processing in developing countries centres around informal waste pickers who are the thematic concern in this thesis.

3.5 Waste Legislation in Ghana

Waste legislation in Ghana has entrusted the general waste management responsibility to the Ministry of Local Government and Rural Development (MLGRD 2004). This responsibility has been decentralised by the Ministry to Metropolitan District and Municipal Assemblies. The regulatory authority of this responsibility has been vested in the Environmental Protection Agency (EPA) of Ghana which is under the auspices of the Ministry of Science and Environment. The Metropolitan, Municipal and District Assemblies are responsible for collection and final disposal of waste through their waste Management Departments.

It is pertinent to point out that this responsibility is now in public private partnership (PPP) between the various Assemblies and Josphong group of companies under which is Zoomlion. There are a couple of frameworks in this waste legislation such as: The Local Govern-

ment Act (1994) which governs Solid hazardous, and radioactive waste. Act (462) the Environmental protection Agency Act and the Environmental Sanitation Policy of Ghana (1996) among others. All these waste legislations do not make any provision for informal waste pickers. Bisschop (2017) has also noted that there is no clear cut legislation on informal waste pickers in Ghana. This explains much about the neglect of informal waste picking as an informal activity by state institutions and state policies.

The lack of legislation that covers the informal sector of waste pickers is a clear indication of the side-lining of the informal waste sector in Ghana and for that matter the study area. The lack of policy attention for informal waste pickers implies they are not covered by labour laws, hence their contributions and welfare are equally not catered for. Thus, the policy neglect arguably amounts to disempowerment and for that matter the numerous challenges that they encounter in the work they do. In this sense, there is no proper state-society interaction as these waste pickers are marginalised without legal protection nor social recognition. Linking this to the concept of power as discussed, I argue that policy recognition for informal waste pickers will amount to their empowerment.

3.6 Informal Waste Pickers and their roles in Developing countries.

Understanding the role of waste pickers most definitely will be better off by first understanding who waste pickers are. For the purpose of this thesis, I am discussing waste pickers in the context of developing countries. Waste pickers refer to individuals or groups of people who do recovery of materials from waste for purposes of reuse, for sell to recyclers or for consumption. These individuals are generally known as `scavengers` waste picker`s or rag pickers` in English. However, they are assigned different names in different places depending on the local language and the places of work (Medina 2008:8). In Ghana, street waste pickers who deal in scraps are simply known as scrap dealers while those who do door to door collection are known as `Kaya bola` (Gugssa 2012). In Mexico, dumpsite waste pickers are known as `pepenadores` while cardboard collectors are known as `catoneros` (Medina 2008). Waste pickers are said to “belong to vulnerable groups : recent

migrants, the unemployed, the disabled, women and children. It is added that they work under deplorable and hostile conditions (Medina 2008:1)

In the context of MSWM, informal waste picking implies the activities of scavengers in recovery, reuse and sales of recyclable materials. The informality of waste pickers in MSWM is a description of the unregistered, unlicensed, unrecognised and non-tax-paying activities of waste pickers. Informal waste picking is also characterised with labour intensity, low pay, low technology, unrecorded and unregulated work (Wilson et al. 2006b:797)

According to Medina (2008:1) waste pickers constitute at least 1% of the population worldwide; that is a sum of fifteen million people survive through informal waste picking. He has ascertained that recycling of waste in developing countries is done mostly by informal waste pickers. Up to 2% of populations in cities of developing countries earn their livelihood and survival through informal waste picking (Medina 2008:8). It has been established that the basic reason that compels people to involve in waste picking is economic. Medina (2007:19) has pointed out that in developing countries, scavenging is caused by “chronic poverty, high unemployment, industrial demand for recycling and by lack of a safety net for the poor. The international Labour Organisation (ILO 2014 :14) has identified “the low level of investment” as a motivation for the entry of informal waste pickers into the trade of waste picking.

According to Medina (2000), despite the marginalisation of informal waste pickers in MSWM, they constitute an active part of the chain of production that contributes to the sustainability of both domestic and export economy in developing countries. Various strategies are used by informal waste pickers to recover recyclable materials from different sources. Some collect recyclable materials from streets, others from landfill sites. Recyclable materials are also collected from dumps bought from households in other cases.

Though Informal waste pickers are noted to be at the bottom of the waste commodity chain, they constitute the major source of recyclable materials for recycling industries

worldwide (Scheinberg et al. 2011, Wilson et al. 2006a). In China, the informal sector is noted to be at the forefront of recycling of e-waste and reusable bottles (Zhang et al. 2010). Similarly, in Egypt, informal waste pickers have been noted to have created the most efficient recovery of recyclable materials (Fahmi and Sutton 2006). They constitute a source of raw materials to industries that recycle paper, plastics, metals, aluminium and tissue among others. Metal industries for instance use recyclable ferrous and non-ferrous scraps, aluminium and tinned cans to make industrial components that are useful in the manufacturing of machines, aircraft and vehicles among others (Hartman 2009).

Aside industrial recycling which helps reduce the quantity of waste that is sent to landfill site, another aspect of the work of informal waste pickers that contribute significantly to the reduction of waste is the reuse of some recovered materials. In developing countries, items such as plastic and glass bottles, metal chairs, and wooden furniture are used for either domestic or commercial purpose (Achankeng 2003). The impact of waste picking in reducing waste content can be seen useful in preventing environmental sanitation related hazards. The (3rs) principle of waste management and its associated benefits are embedded in the work of informal waste pickers.

It has also been argued that recycling amounts to the reduction in use of energy and materials like coal, and iron when compared to extraction of raw materials for manufacturing. Similarly, it has been argued that land air and water pollution are reduced thereby minimising global warming since this amounts to saving of the ozone layer. From this point of view, recycling and for that matter informal waste pickers play an essential role in sustainable development (Medina 2000)

To add up to the above, it has also been pointed out that waste picking can be very lucrative and well-paying if exploitations are avoided. For instance, waste pickers earn above the national minimum wage in Brazil (Medina 2000, Dias 2009). “ In Cairo, waste pickers earn an average of € 4.30 per day or roughly €100 per month, waste pickers in Lima earn up to €135 per month. In Pune, they earn about US \$ 108 per month” (Rocha Perrupato-Stahl 2016:14). Arguably, waste picking could constitute more than just a means of survival, but

a rewarding job for those involved in it. Implicitly, waste pickers are not necessarily poor as they are been perceived.

3.7 Hurdles in Informal Waste Picking

Existing literature has it that informal waste pickers work under deplorable conditions with much exposure to hazardous, contaminated and toxic materials. They also suffer harassment, social stigmatisation, political exclusion and other injustices in the environments in which they operate (Gerdes and Gunsilius 2010a:6). In Delhi, informal waste pickers are involved in conflicts and struggles over access to waste as a resource due to the decision of the state to privatise waste management and its subsequent use for energy generation (Demaria and Schindler 2016)

Aside the lack of protection, social exclusion and neglect politically, informal waste picking has also recorded high child labour participation with lack of health insurance and legal protection (Gerdes and Gunsilius 2010a:6). Informal waste pickers are considered as the poorest of the poor and treated with serious disregard. They are sometimes seen as nuisance to society and to waste management authorities in the case of MSWM. Their work in most cases are criminalised and not recognised as a contribution to ecological sustainability and resilience (Fahmi and Sutton 2006, Schindler et al. 2012b, Wilson et al. 2006a). They are mostly made up of the marginal groups and migrants who constitute the urban poor. In India, the Harijans are noted to have played an active role in waste recovery for livelihood (Medina 2008:9).

Informal waste pickers are at the bottom of the waste commodity chain. At the top are the recyclable industry who deal directly with the intermediary waste buyers. There are also middle men who exploit informal waste pickers; this explains the low earnings of some informal waste pickers in the waste trade. In cases where informal waste pickers are not organized into cooperatives, their bargaining power which is already fragile becomes worse off (Wilson et al. 2006a:800)

3.8 Arguments for the integration of informal waste pickers

Chaturvedi et al (2015:14) used the case of Delhi to demonstrate how exclusion of informal private sector actors results in conflicts and how conflicts have the potential to thwart the success of public private partnership in waste management. Chaturvedi has indicated that the success of private public partnership largely depends on the inclusion of all relevant stake holders and actors, that is both formal and informal as well as public and private. Analytically the exclusion of informal waste pickers in the waste management front in the context of the Tamale Metropolis is a hall mark of structural inefficiency towards managing waste in the area.

Bisschop and Coletto (2017) have noted that the crucial role played by the informal waste pickers cannot be easily taken up by the formal waste management bodies. Informal waste pickers are noted to be very flexible, efficient and sometimes render effective services in the absence of a public instituted waste management system. Their role in most cases is complementary to that of the public or public private partnership waste management system, but none the less its highly valuable and hence they must be considered an integral part of the waste management system.

Some scholars argue that informal waste pickers resort to this job due to unemployment. Their primary aim therefore is to earn livelihood. They neither have an ambition of protecting the environment or contributing to sustainable development. Undoubtedly however, some of their activities contribute to sustainable resource usage and environmental protection as well. For this reason, it is worth integrating them into the formal waste management system in order to realise their full potential to contribute to environmental protection and sustainable resource usage. (Gugssa 2012)

Chapter 4 : Findings and Analysis

4.1 Structure of the findings

In my bid to answer the research questions, the findings have been thematised based on the research questions. The first aspect constitute the work, experiences and challenges of informal waste pickers in the Tamale metropolis, the second aspect is made up of proposals put forward by informal waste pickers for consideration by relevant authorities as a way of recognising and compensating them for the work they do. The rest are findings based on cost-shifting and power relations and the final aspect of the findings is based on conflicts and struggles based on waste metabolism in the Metropolis.

Critical to understanding the findings of the research is the social structure of waste recycling which include waste pickers in the Tamale Metropolis. I commence this chapter with the social structural outlook of waste recycling in the Tamale Metropolis of Northern Ghana. A small-scale survey carried out before the conduction of other methodologies revealed two categories of informal waste pickers in the Tamale metropolis; that is the migrant waste pickers who come from neighbouring countries, mostly Niger and native waste pickers who are born and bred in Tamale and its surroundings. There were few other non-natives of Tamale who come from other towns of the Northern region to live in Tamale and depend on waste picking as a means of livelihood.

The migrant waste pickers from neighbouring cities and countries are those commonly found on the streets of Tamale with cart trucks with loads of waste of scrubs of all sorts. These migrant waste pickers move from one household to the other in search of recyclable waste to pick or buy as the case may be. The native waste pickers as revealed by the survey are always found at the landfill site sorting for waste. Waste picking at the landfill site is done by men and women, and boys and girls of school going age who are members of the community close to the landfill site (the communities of Gbalahi and Kulaa). However, on

the streets and households, waste pickers are made up of mainly men who are migrants as mentioned earlier.

The composition of waste pickers as described above confirms the assertion by Medina (2000) that waste pickers are mostly made up of recent migrants and natives who reside close to dumps, landfill sites and other open places where waste is dumped. The involvement of children of school going age in the picking of waste at the landfill site also resonates existing literature which reveals child labour in informal waste picking as problematic (Velis et al. 2012)

4.2 Social Structure of waste recycling

Informal waste pickers are not into any cooperatives or belong to any associations but rather the migrant waste pickers have loyalty to their `masters` who are notably waste traders whom I identify as the first middle men on the waste commodity chain in Tamale; they buy waste from these waste pickers. One of the migrant waste pickers speaks.

“I do not belong to any group. I have been brought here by my master. I come from Niger. My master has brought me here to pick waste or go round to buy waste and come and sell to him. I do not sell to any other person apart from him. He has provided me with accommodation and I am here because he brought me. This work helps me to earn a living”. (Karim, Tamale 10/08/2017).

The migrants noted they are housed by their masters and in return they pick or buy waste to sell to their masters. It was identified that most of the migrant waste pickers are brought from neighbouring countries purposely to provide the services of picking waste or buying waste to sell to their `masters`. On the other hand, the native waste pickers do not owe loyalty to any specific waste trader, but they pick waste to sell to any waste trader or middle man who is ready to buy. Drawing from this structure I relate to the power theory and specifically to `Power Over` to argue that the relationship between waste pickers and their `masters` is conditioned by power in which the `masters` have the ability to determine the

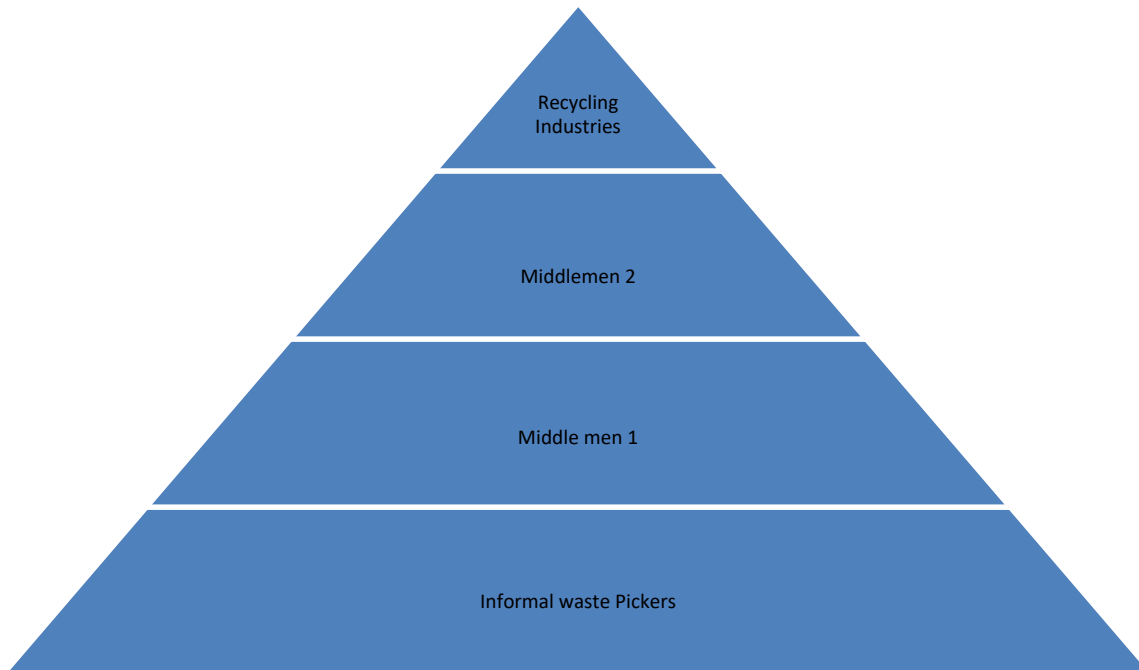
interest of waste pickers who are loyal to them. The power relationship here is not one of coercion but its one of influence conditioned by provision of accommodation and in return for waste.

Additionally, from the perspective of `power with` the inability of waste pickers to exist as cooperatives or organised groups constitute a fertile grounds for their subordination to the formal sector. The waste pickers do the picking or buying from streets and landfill sites and sell the items to their `masters` as in the case of the migrant waste pickers or any waste trader as in the case of the native waste pickers. The waste traders pile up the waste to get it in good quantities before transporting to Accra where they sell to recycling factories through middle men. The merchants indicated that they don't get to bargain with recyclable companies directly, but whatever is said to be the buying price by the middleman is what they take. One of them indicated:

“this waste business is not easy, we take the items to Accra and we cannot get to sell to the recycling companies directly. Unlike our counterparts in Togo who sell to industries directly, in our case it is the middle men in Accra who deal with the industries and tell us what price the industries are offering us. It is unfair, this structure is not good for us, we don't even know who makes that law. This law needs to give us direct access to the recycling factories” (Dawuda Tamale 13/072017)

The above quotes is an indication of missing links in the chain of waste trade. This missing links can be attributed to system failure which results in the formation of `power over`. The middlemen next to recycling industries have the power to determine how much the waste traders who buy from the waste pickers get. This can largely be attributed to the lack of formal legislations governing this aspects of waste work. Thus the state and its institutions have the decision making authority in regulating structures, but they have excluded the informal waste trade and this accounts for the marginalities and exploitation that exist in that structure. Below is a representation of the social structure of waste trade.

Figure 4-1 Social structure of waste trade in the Tamale Metropolis



At the top of the pyramid is the recycling industries, next to the industries in the hierarchy is the middlemen and next to them are the whole sellers of waste who buy waste from waste pickers. At the bottom of the pyramid is the informal waste pickers

4.3 Role of Informal waste pickers in the Tamale Metropolis

The street waste pickers move from one place to another in search of recyclable materials of all sorts ranging from metals to plastics electronic waste, aluminium and cooper discarded products among others. They get these recyclables from transfer stations, households, mechanic shops, market places, community dumping places and households. Waste pickers noted that in the case of households, they buy these items rather than get to pick them for free. Items are then transported by push truck to places where they are dismantled and sorted before selling to whole sellers. Recyclable materials are weighed by the merchants to determine the monetary value of the items to be bought. One of them speaks

“every day I move from one place to the other. From houses to streets. I pick or buy waste from all these places. I pick waste such as broken plastic chairs, discarded items made of aluminium, metals of all sort old car batteries and many more. I pick some of these things from `bola` whiles I buy some from households when I have money to. At the close of my day I go to a whole seller who put it on a weighing scale to determine its value in money. Some items cannot be sold unless I dismantle them in to pieces” (Adamu, Tamale 15/07/2017) Below are pictures indicating the work of informal waste pickers.

Figure 4-2 waste picker dismantling an old freezer in scrub yard.



Source: Field work, 2017.

Figure 4-3 waste picker on the street with push truck



Source: Field work, 2017

Figure 4-4 push truck with daily loads of waste



Source: field work, 2017

Similarly, at the landfill site, the informal waste pickers pick waste by going through the huge quantum of waste dumped at the site. They use their bare hands and hardly wear any protective clothing. They are quick to rush on any vehicle or motor cycle that arrives at the landfill site to compete over `valuable waste` that will be dumped at the site. Daily pickings are put together and sold to nearby merchants before leaving the scene. Though all sorts of waste are dumped, informal waste pickers toil through the refuse to pick and sort out the ones which are recyclable and patronised by the whole sellers. One of them speaks *“I have been doing this work for the past five years. On daily basis I come to sort for waste of all sorts that are patronised by whole sellers. I sort through huge dump of waste here to pick empty tins, plastics, wire gauze and many more. How much I get depend on the quantity of waste I am able to recover. As much as I can lay hand on `needed waste` i pick it from the chunk of waste”* (Badamas, Tamale 15/072018).

The research confirmed the assertion from existing literature that in Ghana the private waste management companies do not sort or recover recyclable waste. At both the landfill sites and on the street, recovery and sorting of recyclable materials was done only by the informal waste pickers. They constitute the only source of recyclable materials to the recycling industries. Drawing from the findings on work of informal waste pickers, I conceptualise that informal waste pickers play the role of physical decomposers in human societies (Demaria 2017:173). Metaphorically, waste pickers are the physical decomposers in human

societies. Just like decomposers in natural ecosystem, informal waste pickers play a role of reducing “the material loops of waste metabolism towards a more circular economy and therefore, are less ecologically unsustainable” (Demaria 2017:2017). Materials that could have gone waste while industries yearn for more raw materials are fed back to recycling industries through the work of informal waste pickers. The work of informal waste pickers embraces the principle of reuse and recycle by the waste hierarchy there by contributing to eco resilience and sustainability from the view point of Ecological Economics and Political ecology.

Further to this, as put forward by (ILO, 2013), informal waste pickers in most parts of the world over just like in the case of Tamale, do the green jobs in the economy. The work of informal waste pickers reduce the quantum of waste transported to the landfill sites. Also at the landfill sites, the work of informal waste pickers reduce the burden of waste that is decomposed mechanically. As one of the key informants of the landfills waste management noted: *“by picking recyclables, they reduce the burden of landfill decomposition . Also, the waste carried here is reduced by the activities of informal waste pickers on the streets”*((Mahama, Tamale, 17/072017). Analytically, informal waste pickers by their work contribute not just to “urban ecological sustainability and resilience from environmental perspective, but also in terms of livelihood and well-being of all citizens”(Mariangela Veronesi. 2016:3)

4.4 Challenges Faced by Informal waste pickers

Informal waste pickers cited a lot of challenges in their work which are categorised and discussed below. Analysis in this section are linked to power relations discussed in the conceptual framework.

(A) Social Stigma and harassment

Informal waste pickers indicated that most people especially households and shop owners see them as nuisance and almost always label them as thieves. They highlighted that it is

very common for waste pickers to be wrongly accused of theft and sent to police stations. They indicated that the police most of the time do not investigate accusations but rather conclude based on what they are told. Pathetically, they noted that the police who should be protecting them when need be rather capitalise on this accusations to extort monies from them before releasing them. This is a clear indication that informal waste pickers in the metropolis are neither recognised nor socially protected. As one of the participants noted

“Many people in the houses see us as thieves. There are quick to label us as criminals and take us to police custodies. Police do take monies from us for this accusations before we are released. This is so intimidating and makes one feel so bad in this work”

Tabiru, Tamale (15/07/2017) These experiences and challenges are peculiar to the street waste pickers. In a related vein, waste pickers noted that they are socially stigmatised and labelled as failures in society which has led them into waste picking. They noted that this stigmatisation gives them a sense of inferiority. *“people point fingers at us. They see us as being Hungary, cannot do anything apart from waste picking and that is really an insult on our self-esteem” (Tabiru Tamale 15/082017)*. Relating to power from within, it can be ascertained that individuals in the informal waste picking lack self-consciousness, self-dignity and awareness. This can partly be attributed to lack of recognition by institutional structures both formally and informally. The self-esteem, desire for well-being and confidence is stifled by lack of social recognition, stereotyping and harassments in the environment in which they operate.

The above experience and challenge of informal waste pickers resonates the assertion by Gerdes and Gunsilius (2010b:6) that informal waste pickers in some developing countries suffer exclusion and social stigmatisation..

(B) Safety and Health Challenges

Another challenge faced by informal waste pickers as they indicated in their participation is safety and health related concerns. They noted that most of the time they get pierced by sharp instruments, or bitten by predators in the course of scavenging. This was a common

challenge mentioned by both waste pickers at the landfill site and those on the streets. They complained bitterly that they are prone to injuries while doing this work; this brings out the issue of whether they have any coverage for health insurance by the state but it turned out that they are not covered by insurance schemes for the work they do. Waste pickers at the landfill site complained bitterly about inhaling much of the stench from the decomposing heap of waste while scavenging. This they say makes them fall sick frequently. Their safety they said is always at stake as they wear less protective clothes while they sort out waste. One of the participants indicated that. “ *our work is very dangerous, I don't use protective wear, because I cannot afford it. Look at my hands, I have been pierced severally by sharp instruments and as for insects bites and bacteria issues, the least said about that the better. Our lives as waste pickers is in jeopardy both in short and long run*” (Musab, Tamale, 15/072017)

The health and safety related challenge here can be analysed from the point of `power to`. The neglect of the informal waste pickers by state institutions and policies has directly denied them access to welfare and wellbeing in the work they do. The informal waste pickers lack the power to change existing hierarchies that will facilitate their access to public welfare and services. They also do not have the knowledge of legal and political process that can relieve them of their woes as a marginal group in society.

(c) Financial Related Challenge

Another challenge highlighted by informal waste pickers in the study is the issue of finance. This challenge is peculiar to Waste pickers on the streets. They complained that households have come to the realisation that recyclable waste is actually a resource and hence they do not give it out but they sell it to them. “*in most cases now we are not able to get recyclable materials for free. We buy them from most households and shops. It is only at collection points that we get to pick some. To be able to buy much we need money, and that is always the challenge*” (Fidaus, Tamale 18/07/2017)

So for most waste pickers on the streets of Tamale, it is not just waste picking but it is also `waste buying`. Again the ability for informal waste pickers to act to change existing hierarchies which do not give them recognition and access to facilities like microfinance is lacking. That is informal waste pickers are lacking the `power to`. The lack of policy coverage explains much of these challenges they suffer.

(C) Pricing and organisation related challenges

Waste pickers lamented that they do not have any organised structure or association and this poses a challenge to them in terms of pricing and welfare. They asserted that prices come from recycling industries and they as informal waste pickers do not have a voice in determining prices of items. They attribute the pushing down of prices in their throats to lack of organisational structures or association within the Metropolis. One of them lamented by saying this: *“we know we are being exploited. We work all day, toil through the hot sun, get beaten by rain, walk through miles of distance and yet get the least for the items we sell, we are human beings and deserve better than this”* (Adam, Tamale 20/072017)

As indicated in the hierarchical structure earlier, waste pickers occupy the least position in the waste commodity chain. They do the most tedious part of the work and get the least of value for their work. Relating this to `power with`, it is clear that informal waste pickers lack the power of mobilisation and alliance building; which stifles their ability to change their plight from collective action. They indicated that their ability to resist this exploitative tendencies lies in organised associations which they lack. Thus, the exploitative relationship between informal waste pickers at the bottom of the pyramid on one hand and the recycling industries and middlemen on the other signals power relations and sheer inequality in the waste commodity frontier in the Metropolis. The plight of informal waste pickers in this scenario is not different from their counterparts in other developing countries like south Africa as put forward by (Kutywayo 2016:65)

4.5 Recognizing and Compensating Informal Waste Pickers

Informal waste pickers in the Metropolis registered their displeasure in varied ways through my interaction with them. They proposed that the following policy interventions be put in place for the betterment of their lives and to enable them improve on the work they do. I have analysed their policy intervention demands in relation to the concept of empowerment as discussed under theoretical and conceptual framework.

First and foremost, they proposed that state authorities and for that matter the Metropolitan Assembly need to put in place by-laws which will purposely protect them from harassment and accusations when the need arise. They stated that the police be made to understand that informal waste picking is not synonymous to criminality and thievery and hence, they should be given fair hearing and treatment when accused rather being handled like known criminals. *“we need laws in the metropolis that will protect us from tis harassments and extortions by police. This laws will also help protect our dignity within society rather accusations all the time. We need to be fairly heard when accused but not extorted”* (Adamu, Tamale 21/08/2017). Formulation of bye laws that protect informal waste pickers would amount to empowerment that will enable them challenge injustice, inequality, discrimination and stigma. Treating informal waste pickers as criminals without investigating suspicions amounts to uncategorical vilification of all waste pickers. In a related proposition, they entreat that society need to see them as making valuable contributions to environmental sustainability rather than viewing and treating them as social misfits and nuisance. In a nutshell, they call for both social recognition and legal protection.

Secondly, waste pickers added that welfare schemes and financial support schemes be set up for them. They entreated that they could be registered into associations, and given welfare packages like health insurance and financial support to enable them enhance their work. Waste pickers indicated that they could in the least be helped with protective clothing that will ensure their safety in the working environment. *“ the local government can help set up something that can address our needs. We need access to microfinances where we can access money to help us do our work. Organising ourselves in to associations also need the intervention of the metropolitan authorities”*

(Hardi, Tamale, 17/072017). From the perspective of empowerment, waste pickers are demanding for access to financial resources and welfare. This will boost their self-esteem and offer them the opportunity to challenge discrimination and subordination.

Thirdly, the waste pickers indicated that their provision of environmental services deserves to be paid for. Just like their counterparts in the formal sector, they demand payment for their environmental services. As a participant noted: *“our work is very important to the environment, yet we are not paid anything, you can imagine the quantum of waste we retrieve from this landfill site and how that helps the environment. Nobody pays us for this, at least something should be done for us, we bring back resources from waste unlike the private waste management company that just bring waste to dump without recovering or recycling”* Informal waste pickers noted that they are not necessarily demanding for integration into the formal waste management sector, but rather they are simply demanding for recognition for the work they do. They categorically stated that they can be recognised without necessarily being integrated into the formal sector. This policy proposal put forward by informal waste pickers contradicts the arguments for the integration of informal waste pickers into the formal waste management system by some scholars.

Making an argument from the waste management perspective, it is pertinent to point out that recycling is one key essential component of the waste management cycle and waste pickers are the source of raw materials and hence must be accorded credit for the environmental advantages associated with recycling. Demaria (2017) has noted the following as the environmental benefits of recycling: lessens burden on landfill site, reduces greenhouse gas emissions, minimize impact on biodiversity and reduce usage of water and energy.

4.6 Cost shifting, power relations and invisibility of waste pickers

Key informant information from the Zoom Lion landfills waste management group in the Tamale Metropolis confirmed that the company do not have a responsibility per their partnership in the waste management in the Tamale Metropolis to engage in recovery and recycling of waste, hence, they neither sort, nor recover or recycle waste but they dump all waste at the landfill site for decomposition through the use of bulldozers. *“we do not recover nor recycle waste, but we do landfill site engineering to decompose all waste that is brought here by our trucks. The recovery and recycling programme might be introduced later, but I don’t know when. It is only the scavengers who do recovery of waste”*(Chimsi, Tamale 19/07/2017).The waste management company is paid by the Tamale metropolis based on the tonnes of waste that is brought to the landfill site on daily bases. Recordings of tonnage of waste is done by workers of the landfill management. There are also representatives of the metropolitan waste management department at the landfill site to cross check work of the landfill site management. The official at the landfills site waste management of the private waste management company acknowledged that scavengers as he called them play an important role in reducing the quantum of waste that come to the landfill site. *“we know their work contributes in reducing the tonnage of waste that is decomposed. Most importantly, some waste that cannot easily decompose but are of economic value to them are recovered, this helps in increasing landfill space”* (Hardi Tamale 21/07/2017). He also confirmed that the recovery of waste by the waste pickers at the landfill sites reduces the burden of the quantity of waste that is decomposed. Below are pictures showing various quantity of waste recovered at the landfill site.

Figure 4-5 waste recovered from the landfill site



Source Field work 2017.

Figure 4-6 Waste recovered by waste pickers at the landfill site



Source: Filed work, 2017.

Figure 4-7 recovered waste being mangled by waste picker



Source: field work, 2017.

Figure 4-8 waste recovered at the landfill site



Source: field work, 2014.

Despite these acknowledgements, waste pickers are not compensated in any way by either the Metropolitan Assembly or the private waste management company. Drawing from the field of Ecological economics and specifically on the work of (Kapp 1963) I argue that the

private waste management company is a representation of capitalism and inherent in capitalism is the tendency of cost -shifting for profit motives. The waste pickers suffer the consequences of waste recovery related challenges outlined earlier while the benefits of less burden in waste decomposition is profitable to the waste management company. Thus, cost is shifted from the waste management company to the informal waste pickers. The waste pickers in their demands outlined earlier require that they get paid for their environmental services. They assert that their services are not recognised and their voices are not always heard and they remain invisible due to power relations between them and the waste management authorities.

Additionally, from the perspective of power relations, specifically as discussed in PE, the powerful actors, in this case the state and private waste management authorities take decisions based on their interest. The fact that informal waste pickers are not paid for the recovery services is a clear indication of lack of recognition and consideration of their services. Viewing this from the perspective of `power over` the waste pickers are not part of the decision making process, and their interest is not considered. Thus they are politically excluded and marginalised by the powerful actors despite the significant role they play in the waste management front.

The above findings reflect the ideas of Martinez-Allier and O`connor (1999) that, externalities or cost -shifting are not due to inability of markets to internalise cost, but rather a successful system of shifting cost due to power relations. It is obvious that in the case of informal waste picking in the Tamale Metro, the waste management authorities have successfully shifted cost of recovery of recyclable materials to informal waste pickers without any compensation and recognition due to power relations, hence their invisibility.

4.7 Cost-shifting and Ecological distribution conflicts

Varied forms of conflicts and struggles are caused by waste metabolism in the Tamale Metropolis. Details of the nature and specific causes of these conflicts are analysed and discussed below based on the findings I will present from key informants of the villages nearer to the landfill site, the waste management group at the landfill site and the informal waste pickers at the site.

(A) Conflict between the waste management group, Tamale Metro and the nearby Gbalahi

According to the key informant of the Gbalahi village, the landfill site was situated at its current location closer to the village on the deception of the Metropolitan Assembly and the waste management company that they will turn waste that will be brought to the site into fertilizer for the benefit of the inhabitants. *“we were told the land will be used for setting up a fertilizer factory, they promised we will be the primary beneficiaries of this factory but this never happened, all they do is to bring waste and dump it here without properly managing it”* (Azizi, Tamale, 21/07/2017).

However, years passed by and all they experienced was continues dumping of waste without even proper landfill site management. Taring the road to the village, pipe born water and health facilities which were promised them turn out to be unfulfilled ones. The informant added that siting of the landfill site closer to the two villages; that is kulaa and Gbalahi has caused them a lot of problems. The informants for the two villages complained bitterly about the following environmental and health related problems:

“This land fill site has caused us a lot of problems; our only source of drinking water has been polluted, now we go so many miles to look for water. The air as you can experience for your self is not good for inhaling around this surroundings due to contamination coming from the landfill site. Mosquitoes and black flies are hovering around us and in the year 2013 we had massive cholera break out due to this flies jumping on our foods” (Bashiru, and Abu Gbalahi, 22/07/2017).

Figure 4-9 river pollution close to the landfill site



Source: field work 2017

Having been to the village on numerous occasions and part taking in waste recovery activities, I can attest to this complain of contaminated air. Even from meters of entering the village, the stench welcomes you unpleasantly. Analytically, two things can be pointed out here; one, there is an act of shifting of social cost of the burdens of pollution from the city of Tamale to the village of Kulaa and Gbalahi. Also, social cost arguably has been shifted from the waste management company to the villages. The private waste management company does not pay for the cost of the burdens of pollution, thus, it can be argued that the company accumulate capital from the waste management by contaminating the environment of the two villages. This situation typically fits the proposal by Demaria (2017) to have a concept of accumulation by contamination alongside accumulation by dispossession of Harvey's.

The second aspect of the burdens of pollution is the question of who has the power to shift cost? The waste management company backed by the Metropolitan Waste Management Department (MWMD) and for that matter state authority have the power in this case to make decisions on where the social cost of burdens of pollution is shifted to. The communities of Kulaa and Gbalahi can be classified as being overpowered by the waste management authorities. This re-echoes the assertion by Bryant (1997) that the relationship between societies and state in competing interest in the environment is conditioned by power

relations. He has added that “the control over the environment of others is also a reflection in the power to pollute that environment” (Bryant 1997:11).

The environmental consequences of this waste management also defies the essence of MSWM which seeks to sustain the environment and ensure good sanitation and health. The above unevenly distributed environmental goods and bad resulted in resistance from the villages of Gbalahi. They blocked roads in 2013 to prevent dumping of waste unless conditions promised were fulfilled and landfill site environmental hazards eradicated. One of the key informants noted. *“the environmental problems were too much and we had to do something about it. We blocked the roads and threaten to burn any vehicle that will bring waste to the landfill site. Because of this action waste was scattered everywhere in Tamale since they could not get a place to dispose off it. Environmental protection agency supported our action and threatened to help us drag the Waste Management Authorities to court. Some politics came up and it stopped, but we are still planning on what action to embark on and that I will not let any one know for now”* (Wadudu, Gbalahi, 22/07/2017).

The resistance from the village members reflects the assertion by Martinez-Allier Joan (1999) that ecological distribution conflicts emanates from unequal distribution of environmental cost and benefits. It is very obvious that the community close to the landfill site are suffering environmental injustice. However, the resistance and conflict which ensued has not solve the problems discussed above. The residence and key stake holders clearly stated they are planning on embarking on serious stringent, measures to demand environmental justice. They categorically stated that the resistance embarked upon in the past was interfered with power relations given that the Environmental Protection Agency could not help them drug the waste management company and the Metropolitan Assembly to court due to power relations and the interplay of politics.

The resistance of the villages against the waste management company and the Tamale Metropolis mirrored the concept of environmentalism of the poor by (2003b). It’s also a typical case of fighting against environmental injustices through Not In My Back Yard (NIMBY) adage.

(B) Conflict between Informal waste pickers and MWMA

In-depth interaction with the Municipal authorities' waste management department revealed that they have had several confrontations with the waste pickers at the landfill site. Metropolitan authorities indicated that they have tried stopping the activities of waste picking on the grounds that waste pickers do not have safety standards that protect them from jeopardising their health. *"We have tried stopping their activities from the landfill site. They do not have any safety standards and we fear for their health. An attempt to stop them has resulted in several conflicts between us. They tried lynching one of our officials"* (Adam Gbalabi landfill site 22/07/2017)

Waste management authorities also lamented the use of children as labour by some parents at the land fill site; this they say divert the attention of the children from school. On the other hand, waste pickers asserted that they cannot stop this job since it serves as their source of livelihood and survival. This resulted in a struggle and contestations between waste pickers and the metropolitan waste management authorities. Analytically, from the power and empowerment nexus, the waste management authorities are adopting a power relation condition to do what they think is right, but from the empowerment perspective, waste management authorities who agreed to the fact that informal waste pickers are contributing to the reduction of waste decomposition could consider alternative ways of enhancing the work of informal waste pickers in relation to safety rather than struggling to deny them access to their source of livelihood. Deeper probes are needed to properly understand the genuineness of the grounds on which waste management authorities are trying to stop the work of informal waste pickers.

It is worthy to note that unlike the case of Delhi in India where conflicts are due to struggle for access to and control over waste between the private sector and the waste pickers (Demaria and Schindler 2016), in the case of Tamale, the authorities claim to be worried about the non-existence of safety standards among waste pickers and therefore think that stopping them from the work they do at the landfills is the best alternative. From the waste studies perspective, it is ironic to think of efficient and effective waste management whiles trying to do away with people who contribute significantly but indirectly to that effect. From the empowerment point of view, I also assert that waste management authorities

cannot claim empathy for waste pickers when they are rather trying to worsen their already fragile situation.

(c) Struggles Among waste pickers

Interactions and observation at the landfill site revealed that informal waste pickers struggle amongst themselves over access to waste. The trucks arriving to off load waste hardly stops when waste pickers rush to struggle over waste that is to be recovered. Struggles over access to resourceful waste among the waste pickers turns out to make the job of waste picking a jungle of survival of the fittest. One of them noted *“here we struggle over valuable waste and the strongest get it most. We live like rivals in this waste picking site and some hurt each other baldly over waste”* (Karim Gbalahi 24/072017). From the perspective of Political Ecology and specifically EDC`S waste in the Tamale Metropolis is seen as a resource over which waste pickers popularly known as scavengers struggle over access to and the final disposal of waste constitute a fertile grounds for the generation of conflicts based on what can be termed as ecological unequal exchange. The case of waste and its associated problems in the Tamale Metropolis resonates the explanation of ecological distribution conflicts as the unequal distribution of environmental goods and bad as well as the struggle over access to natural resources (O’Connor et al. 1996)

Chapter Five : Conclusion

Waste generation is on the upsurge in African countries due to rapid urbanization and increasing population size. Handling this waste has been problematic due to technical and managerial inefficiencies (Jaensson 2008, Hoornweg and Bhada-Tata 2012a). Ghana and for that matter the Tamale Metropolis is not an exception in the problems of handling waste management (Puopiel 2010b). The responsibility of waste management has been shifted from being purely a public affair to public private partnership (ppp). The private waste management sector in the Tamale Metropolis just like in the other regions of Ghana and in most developing countries do not nor recycle waste; this has been added to the inefficiencies of the private sector in their waste management responsibility in the Tamale Metropolis since waste recovery has a couple of environmental and economic advantages and is considered one of the key components of waste management strategies (Puopiel 2010b, Oteng-Ababio 2010, Tchobanoglous 1993b).

I have argued that in the waste management system of Tamale, there is an invisible, Unrecognized and uncompensated system of informal waste pickers who perform the significant role of waste recovery for recycling by industries. I have likened their role in human societies to that of physical decomposers in biological systems. This argument resonates the call by some scholars for recognition and integration of the informal sector into formal waste management systems.

I have pointed out that the lack of policy coverage for this waste pickers has culminated into lots of challenges for them; they are socially stigmatized, politically excluded, legally unrecognized and economically exploited. I have further asserted that their exclusion in the various structures of decision making in society has amounted to disempowerment, discrimination and marginalization conditioned by power relations. Also conflicting situations between informal waste pickers and the Zoom lion has been identified and can be attributed to struggle over access to waste as a resource for the informal waste pickers on one hand and the quest of meeting safety standards on the other hand by waste management officials.

Drawing from the perspective of EE and PE, I have conceptualized that the social cost of recovery of recyclable materials has been shifted from the private waste management company to informal waste pickers in the Tamale Metropolis without any due compensation from any waste management authorities. Further to this I have pointed out the circumstances under which waste metabolism in the Tamale Metropolis results in social conflicts. The findings revealed that the burdens of pollution is shifted from the city by the waste management company to the villages closer to the landfill site thereby causing serious environmental havoc to the residence which results in resistance and conflicting situations. Pertinent to this finding is the fact that this situation of shifting of social cost is guided by power relations between the villages on one hand and the waste and metropolitan authorities on another hand.

In sum, integrating, recognizing and catering for the needs of informal waste pickers in the Metropolis will likely result in a paradigm shift on the image of waste pickers and contribute more meaningfully to waste management and environmental sustainability and resilience. Further research can be carried out on the involvement of children in waste picking. Additionally, evaluating the extent of contributions of informal waste pickers could be another potential area for further research.

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