



Institutional Dynamics of Municipal Solid Waste Management in the Bamenda Metropolis

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Authors' contributions

This work was carried out in collaboration among all authors. Author VKN designed the study, collected the data, performed the statistical analysis, wrote the protocol and the manuscript. Authors MLA and CMW reviewed the first manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Rapid and uncontrolled urbanization in several parts of sub-Saharan Africa (SSA), has introduced a plethora of urban development challenges. This has left city governments 'standing in their sleep', as they strive to deal such issues. A classic example is solid waste management – with waste considered to be principally an urban problem. While the issue of waste has been belaboured in the literature, there is a dearth in geographical literature on the institutional dynamics of solid waste management. Viewed as structures and processes, institutions demonstrate potentials to determine the intentions and actions of urban waste managers and urban dwellers, within the waste management spectrum. Taking the case of Bamenda – a primate city par excellence – this paper explores the dynamics of institutions and their implications for solid waste management. Specifically, it explores the waste management institutional transition and its bearing on current and potentially, future waste management practices. Household surveys, complemented by expert interviews provided data for the study. Through narratives and descriptive statistics, we observed that despite the litany of institutions involved in solid waste management and their related institutional frameworks, their effectiveness remains questionable. This rests, in part, on the

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inadequacy in personnel, and the lack of law enforcement in the courts and city judiciary systems. The ineffectiveness of these instruments in the Bamenda Municipality is as a result of weak legal institutional setup, the absence of courts and a city judiciary system to handle environmental issues (solid waste), irregular or poorly enforced laws, inaccessible neighbourhood, and organizational lapses. Furthermore, the socio-political climate, characterised by insecurity, mars the effective implementation of waste management approaches. This paper argues that the institutional change process in waste management should strive towards the introduction of economic incentives that can motivate urban dwellers to fully engage in the process. Further empirical evidence on the right business-oriented waste management models are required to ground this claim.

Keywords: Solid waste; management; institutional change; sustainable use.

1. INTRODUCTION

Solid Waste Management (SWM) is a major environmental issue today, especially in developing countries. Being the consequence of population growth and urbanization, solid waste is a complex phenomenon that does not only come with opportunities and benefits for countries, but also introduces social, economic and environmental problems [1,2]. An outstanding urban problem of rapidly growing cities of developing countries is the environmental dilemma posed by liquid and especially solid waste. Such mounting waste has been commonly observed to be directly proportional to the population and technological developments of contemporary civilization. Urban populations are continually on the increase. This is accompanied by changing lifestyles, leading to many socio-economic problems in urban centers (Fombe et al. 2012); [3,4]. Urbanization and associated problems are visible in cities of our countries and most especially, in developing countries. Countries around the world are therefore overwhelmed by this environmental issue. Solid waste management (SWM) embraces a variety of processes and practices that describe the collection, transportation, treatment and disposal of unwanted residues of any given community [5-7]. Human activities lead to the generation of waste which cause changes in the environment and inflicts harm on animals, plants and ecosystems. SWM is an environmental consideration in the management of urban spaces as it is a fundamental prerequisite in ensuring sustainable urban development [8,9]. Notwithstanding, waste has health, socio-economic and environmental impacts on the society. In fact, solid waste is one of the five most challenging problems plaguing city managers. This is perhaps, because it is a reflection of the quality of governance and a definite vote-loser if unmanaged (UN-Habitat, 2010). Most city governments are confronted by

mounting problems in the domain of solid waste management. In developed countries, the problems usually centre around the difficulties and high cost of disposing of the large volume of waste generated by households and businesses. While in the developing countries, the main problems are related to collection, with between one-third and one-half of all solid waste generated in Third World cities remaining uncollected (Pacione, 2005).

Although several forces militate against proper waste management in cities, the role of institutions cannot be overlooked. Also known as the rules of the game [10,11], institutions could be viewed as processes (e.g., laws, policies and conventions), and as structures (e.g. city councils). In both cases, they serve as tissues of social relations that link individuals, groups, and communities [12] (Fleetwood, 2008). It is also possible to further classify institutions as *ephemeral* (very short-term arrangements made by actors to a process – waste management in this case) while minimizing conflicts; *partially enduring* – *institutional* arrangements that translate to norms for a while and fizzle out as new actors come to stage [13] ; and *enduring*, where such institutions are codified (in the case of formal) and/or enforced beyond the physical to include strong spiritual processes [11,13] These classifications lead us to an evidence of change – viewed here as the transition from one waste management structure to another. Several studies have investigated solid waste management issues, including solid waste generation, collection, disposal and other management challenges [14-17]. However, in the field of garbage governance, very little is known, with regards to how institutional transitions (re)define waste management [12,18]. The study is therefore relevant considering the need to avoid sailing blindly in the current wave of waste management, without taking stock of how changes in institutions engender waste

management processes. This change which applies to Bamenda, Cameroon, is yet to be fully explored. The aim of this paper is to explore the dynamics of institutions and implications for solid waste management in Bamenda. Specifically, the paper analyzes the waste management institutional transition and its bearing on current and potentially, future waste management practices.

2. THE PROBLEM

There is no gainsaying that rapid and uncontrolled urbanization in sub-Saharan Africa (SSA) has introduced a plethora of urban development challenges, with solid waste management standing as one. Although several studies have addressed the causes and effects of solid waste disposal, an issue which seemed to have eluded geographical literature, at least in the context of Bamenda, centres on the institutional dynamics of solid waste management. Whether ephemeral, intermittent or enduring, institutions function by shaping the intentions and actions of agents [13], making them useful lenses to understand actual and potential waste management practices. This concerns Bamenda – one of Cameroon's major cities. The Bamenda municipality has over the years grown in terms of population and size. This is attributed to her situation as a primate city in the Region in relation to the neighbouring small towns [19,20]. The influx of population from these satellite towns lead to an enormous increase in the population of Bamenda, thus precipitating the process of urbanization. A negative outcome of such urbanization is solid waste generation. On average, waste generation aligns with the average for sub-Saharan Africa which stands at 0.3-1.4 kg per capita per day [21]. Solid waste is becoming an urban problem for Bamenda because low income areas seem to generate much waste in varied quantities and varieties. Perhaps, this could be due to the fact that low income groups have fewer production and consumption input and are less wasteful in consumption. The more affluent inhabitants apparently have a greater propensity to buy and spend with higher income for larger volumes of consumable goods. They appear more wasteful in their routine consumption patterns. In the Bamenda municipality, however, low income neighbourhoods tend to generate more waste than the high-income areas which could be explained in terms of the high density of

population, that characterise low-income residential areas. Solid waste generation and disposal appears problematic to institutions concerned with the handling of solid waste in Bamenda. Rapid population led to much waste generation in the face of institutional change. This solid waste generation and uncorresponding removal, result to the municipality being littered with numerous garbage amphi-theatres. Studies on waste in Bamenda show that nothing has been done with regards to institutional change on solid waste management [21]. There is an existing lacuna on the subject of solid waste management and institutional change in the Bamenda Municipality. This forms the central axis within which the paper revolves.

3. METHODOLOGY

3.1 Study Area and Research Methods

Bamenda Municipality as shown in Fig. 1, expands over the North Western Plateau of Cameroon. It is the headquarters of the North West Region. Besides hosting the headquarters of the North West Region, this municipality is the socio-economic nerve wire of the region. Bamenda is a primate municipality considering her situation in relation to the satellite towns. It is located between longitude 10° 09" and 10° 11" East of the Greenwich Meridian and between latitudes 5° 56" and 5° 58" North of the equator, as shown on Fig. 1. Bamenda Municipality is found in Mezam Division and it is the capital of the North West region of Cameroon. This settlement is bounded to the north by Bafut and to the north east by Bambui and Bambili. To the west and south west, it is bordered by Mbengwi and Bali respectively and to the south, by Akum. The municipality covers three sub-divisional Councils (Bamenda I, Bamenda II, and Bamenda III). Emerging as a city in the colonial days of the British, French and Germans from the 19th century, Bamenda Municipality has transcended from being a traditional monoculture village to a complex heterogeneous municipality offering many services to its inhabitants as well as to the satellite towns and the hinterlands of the region at large. Bamenda Municipality is at the cross routes, linking cities in neighbouring Nigeria such as Enugu and Calabar to the economic and capital cities of Douala and Yaounde, respectively [22].

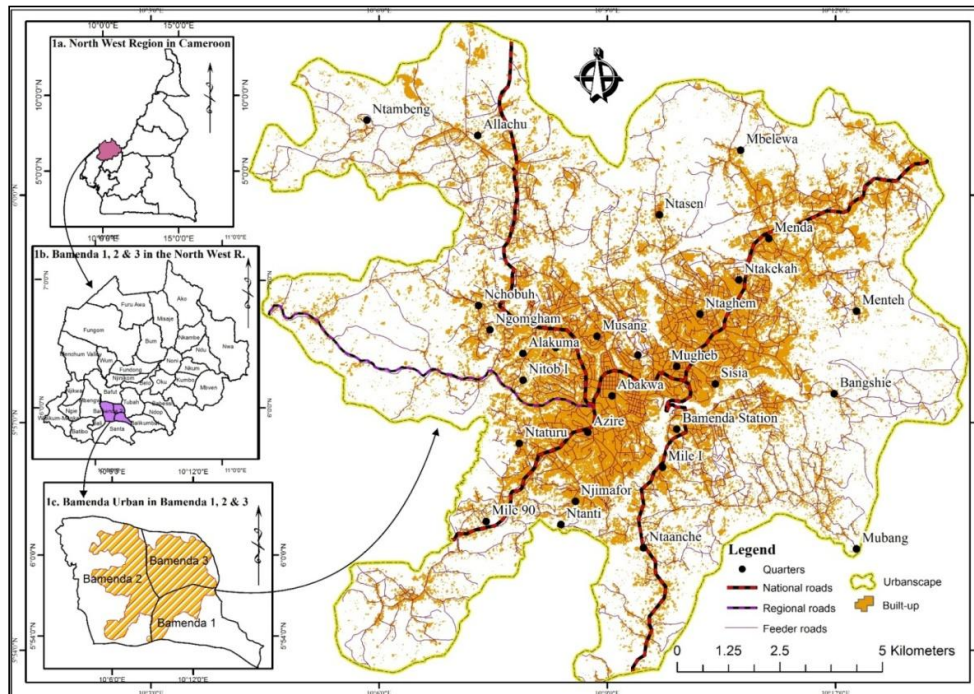


Fig. 1. Location of Bamenda in Cameroon and the North West Region of Cameroon (Source: Fieldwork, 2020)

The city of Bamenda has over the years experienced rapid urbanization and this process is still ongoing. This is as a result of the increasing birth rates amongst the youthful population in the municipality and rural-urban migration. Bamenda is the headquarters of the North West Region. Given her political functions as the headquarters of the Region, this city has attracted people from rest of the country and the world, giving it a cosmopolitan nature. The municipality of Bamenda has expanded spatially. North eastward, the municipality has expanded passing through New layout, Ghana Street, Cow Street to Sisia I, II and III, Bayelle, Ndamukong, Ntabessi, Foncha Street and to present day Ntassen, Mile Three and Four Nkwen, Ntamuche, Mbessi and Mbelewa all in the Nkwen Fandom. Northwards, the municipality has expanded from Ngomgham through Ntarinkon, Mulang, Chubou to Mbingfibieh and through Mile 8 to the Mankon Fon's palace. Westwards, the municipality has expanded from Atuazire through Ade Metal, Nitob I to VII, to Ntaturu and Mile 90 on the stretch to Bali. Southwards, the municipality has expanded through Atiakom, Abangoh, Mile I Up-station to Blue Moon and from Government Residential Area (GRA) through Hotspot to Banjah and Mendankwe village. Between 1964 and 1976, the population

increased by a factor of 2.5% from 18,300. Rural-urban migration is the main cause of rapid urban growth in Bamenda. This is as a result of the political and socio-economic functions performed by the municipality.

3.2 Research Methods

This paper adopts an explanatory and exploratory design that uses the cluster sample survey procedure to data collection with focus on questionnaires and documented sources. The choice of this design is because the research problem is multi-disciplinary with several stakeholders involved and affected by poor waste management in the Bamenda Municipality. Qualitative research methods include investigation by sampling peoples' opinions about the institutional shift in solid waste management guided by our research questions, research objectives and research hypothesis. Although qualitative method address participants' opinions, feelings and choices, in order to know the degree or percentage of responses to particular research questions, these opinions were quantified. In this way, we were able to determine with precision the population of Bamenda municipality that is away of the institutional shift in waste management.

Field surveys and observations were also meant to observe the reality in the field and to be able to draw logical conclusions as well as think of proposing sustainable policies. Interviews were carried out to the officials of the various institutions that have been and are concerned with waste management such as the Bamenda city council, Hygiene and sanitation Company (HYSACAM), Non-Governmental Organisations (NGOs) and Common Initiative Groups (CIGs) that are involved in waste management. Apart from the officials, some individuals were also interviewed in order to get their opinion and appreciation of waste management situation in the municipality of Bamenda. Group discussions were held with a number of different groups created by the researcher. The researcher created such groups from amongsts 'Njangi' groups, Association of business people both men and women, "Buyam Sellam" women and some transporters (taxi drivers), bike riders and people of specialized professions such as layers and teachers. This was in order to have a feel of how these various groups think about waste management in the Bamenda Municipality. Above all, questionnaires were administered to households in the study site. In response to this household approach, quarters were grouped in terms of housing density and a percentage of questionnaires to be administered tag to the different quarters according to their housing density. There was a 1% questionnaire administration in quarters having a housing density of between 1-2,000 houses, 2% in quarters having density of 2001- 4000, 3% in the quarters of density of 4001-6000 and 4% in quarters having density of household of 6001 and above. This method was applied because some quarters are larger in terms of area coverage than others and others denser than others. This approach was also to avoid the bias of concentrating our questionnaire administration in some particular quarters. The results were analyzed using qualitative tools (narratives and thematic analysis), and descriptive tools (frequencies and percentages).

4. RESULTS AND DISCUSSION

4.1 Evolution of Waste Management in Bamenda

Solid waste management in Cameroon is governed by legal institutions involved in waste management having specific responsibilities. Apart from the legal institutions there are also legal frameworks put in place in the form of

Laws, Decrees and Orders to ensure that the different types of waste are managed according to the legal framework stipulated. This paper examines the evolution of legal and institutional framework governing solid waste management in Cameroon in general and Bamenda in particular. The examination of the evolution of the legal and institutional framework is guided by the hypothesis that, the evolution of the institutional framework has been insignificant for solid waste management in the Bamenda Municipality. This section presents the various laws, decrees, orders and decisions laid down by the Cameroon Government to govern solid waste management. It tries to bring out the extent of the implementation of the laws, decrees, orders and decisions governing solid waste management in Cameroon and Bamenda our case in point. In order to handle growing volumes of solid wastes generated in a country, proper policies need to be enacted and implemented. These policies are formulated based on the provision of the constitution. Some of these are laws, Decrees, Orders and Decisions passed by the Prime Minister, Ministers of ministry concerned with Solid Waste management and others (regulations) lay down by the various institutions concerned with the governance of Solid Waste Management in a particular city (Table 1).

Furthermore, several legal institutions are concerned with solid Waste management which are also found in Bamenda our case in point (Table 2). Here below are legal institutional frameworks of the different institutions that are concerned with solid waste management in Cameroon and Bamenda municipality in particular.

The various ministries involved in waste management are presented with their responsibilities and specificities. In principle the above legal institutional framework showing the responsibilities of the different ministries is what is to obtain. This is to ensure a participatory approach where each ministry takes her responsibility and apply it to the latter. Nevertheless, the applicability of what is stipulated in the framework as to the role of each ministry and councils in solid waste management in Cameroon and Bamenda in particular is all a different story. According to the legal institutional framework, the major institutions concerned with solid waste management are the councils and city councils. The various ministries according to their responsibility are to enforce and ensure that the councils effectively carry out their role of

properly managing solid waste in their different municipalities. The technical support expected from the different ministries, the financial support from the ministry of Economy and finance through Mutual Assistance for Local Development (FEICOM) is inadequate, public education campaigns on hygiene and sanitation from the ministry of public health very insufficient, strategies on carving out good drainages for the council area inadequately executed by the ministry of Urban Development and Housing. In this regard, the management of solid waste is left in the hands of the various councils. Given the inability of the City councils to meet up with the technical know-how, equipment, finances to purchase equipment and carry out education and sensitization campaigns on solid waste management, the mounting and littered solid waste in our cities and Bamenda in particular is the result.

For the Councils that manage rural solid waste, that is not a major problem. This is because most of our rural solid wastes are composed more of organic waste. Given the bushes and the farms around, this solid waste is thrown into the bushes or into the farms which intend decomposes into manure. Therefore, solid waste management in the rural areas is not a problem even if the Statutory Ministries concerned with solid waste management do not come to the assistance of the councils.

4.2 Evolution of Institutions of Waste Management

The evolution of institutions concerned with solid waste management in the Bamenda Municipality since independence has been very slow. Very slow because the duration of some of the institutions have been too long without any major impact of the solid waste management felt by the Bamenda community. During the early 1960s just after independence, the population of the Bamenda Municipality was not that much and so too the areal occupation of Bamenda. With the small population, the generation of solid waste was also very insignificant. At this time, more of organic or biodegradable waste was generated and this was thrown in the bushes or farms around. Also because of less modernization many solid waste types were not generated. At this time there was limited diversity of waste type in the municipality and quantity. The limited waste generated and types did not pose any problem in its management. This is because the town was small surrounded by bushes and

farmlands. These wastes were thrown into the bushes and this was no problem as it rapidly decomposed given that more of organic waste was generated at the time. At this time, hygiene and sanitation was ensured by Sanitary Inspectors. Since solid waste did not pose any problem, these Sanitary Inspectors had as term of reference the inspection of the environment that is the surrounds of homes, toilets, restaurants, hotels, business premises, motor parks and cooked food sold in the open market places. These Sanitary Inspectors were identified with their uniforms which were white jackets and white short trousers. This made them very conspicuous. These Sanitary Inspectors were very effective and very regular in their checks. According to Pa Ndengue a notable of the Mankon Fandom of T-Junction Bamenda a 96 years old man, the surrounds of homes were very clean and even where cooked food items were sold. Any home that was identified by these Sanitary Inspectors to be dirty or untidy, without a toilet or a good one, the head or the owner was summoned and obliged to pay an amount for allowing his /her home to be dirty or without a toilet. Dirt's were not seen around the vicinity. This is because all dirt's were thrown far off from homes. Cooked food and local brewed liquor sold at public places was tasted by these Sanitary Inspectors and if not good for consumption, it was taken away and thrown. Even though these Sanitary Inspectors were supervised by the Mankon town Council, they were under the ministry of Public Health.

In November 1977, the Status of the Mankon Town Council was raised to an Urban Council and was called the Bamenda Urban Council. At this time, the population of the municipality had increased and so too was solid waste generation. Solid waste posed a problem as the quantity and different types kept on increasing too. Since the Sanitary Inspectors had nothing to do with waste management, solid waste dumpsites started emerging. The Urban Council at this point took full responsibility of the hygiene and sanitation of its council area and particularly waste management. The Bamenda Municipality was now administered by the Bamenda Urban Council (BUC) under an appointed government delegate. The population and areal expansion of the municipality kept on increasing, given that was the headquarters of the Northwest province at the time and also a primate city. This dual role attracted a lot of population into the city. Solid waste was also increasingly responding to the increasing population. This posed a major

problem to the urban council. A solid waste dumpsite was chosen at mile six Mankon just before the Mezam bridge considering that this site was abit far off from the city. As a means to solve the growing littered solid waste in the municipality, the authorities of the Council had to liaise with the municipality of Dordrecht from Holland. This municipality of Dordrecht from Holland was of great help to the Bamenda Urban Council (BUC) as it provided expert labour who trained the staff of the Bamenda Urban Council on how to managed solid waste and also provided equipment (Trucks) for the council to enable the Council transport the mounting solid waste in the city.

According to a Presidential Decree of 17th January 2008, the Bamenda Urban Council was up grated to Bamenda City Council made up of Bamenda I council, Bamenda II Council, and Bamenda III Councils respectively. This Bamenda City Council was also headed by an appointed government delegate. Though the city of Bamenda was made up of three councils, the duty of solid waste management remained the sole responsibility of the City council. After the training of the Bamenda Urban Council staff (BUC) now Bamenda City Council (BCC), and providing the City Council with the technical-know and equipment, the expertise from the Dordrecht municipality had to withdraw and the Bamenda City Council was now left on its own. Solid waste continued to mount in the City and was dumped everywhere given the growing population numbers. Diversity of the solid waste became also very evident given the increasing urbanization and modernization. With the great diversity of the waste, its management became a herculean task for the City Authorities. Solid waste was seen littered all over the City on the streets, streams, and gutters.

Despite the changes or evolution in the institutions of solid waste management in the Municipality of Bamenda and the contraction of HYSACAM, this to an extent has not solved the mounting solid waste. This is so because of the ever-increasing population both from within and without and also increasing standards of living which has led to greater generation of waste and its diversity. The consequences of the inability of the City council to effectively managed the solid waste, has seen the emergence of some private companies, NGOs, and CIGs aimed at trying to reduce the amount of waste in the City by carrying out recycling and even help transport the waste to the landfills for example Edge Company.

4.3 Stakeholders Involvement in Solid Waste Management in Bamenda

Stakeholders are people and organisations having an interest in good solid waste management, and participating in activities that make that possible. They include households, organisations, enterprises, and all others who are engaged in some waste management activity. Stakeholders' involvement in solid waste management simply means the participation of the community in the waste management proper. Stakeholders may generate waste, function as service providers or participate as state or local government departments, non-governmental organisations (NGOs) and other organisations concerned with certain aspects of waste management. Identification of the stakeholders and their interests is important in coordinating their participation and involvement in various waste management activities. Solid Waste Management (SWM) authority in the Bamenda Municipality is the City Council. The major mission of this authority is to ensure the proper implementation of the legislation, policies and regulation, put in place and support strategic plans (encouragement, monitoring and implementation); to get efficient and adequate management Procedures, the need to gather accurate data on such topics as the quantities and types of waste being generated in the cities and massive investment in equipment and logistics for waste management operations is also part of the authority's responsibilities, as well as responsible to Build up a system in which the communication and information flow among all system stakeholders efficiently work, especially for the major SW generators, by massive publicizing and educating the population on the existing rules and guidelines to be followed and creating more interaction opportunities between the authorities, generators and other major stakeholders. Despite the well spelled out institutional framework of the various ministries involved in solid waste management and the laws, decrees and orders passed in relation to solid waste management, stakeholder participation in solid waste management in the municipality of Bamenda is very insignificant.

4.4 Solid Waste Stream, Infrastructure and Processes

From field survey it is discovered that solid waste management in the Bamenda Municipality takes the top-bottom approach. With this approach,

decisions are taken by the authorities and imposed on the masses. The masses or the households (individuals), Non-Governmental Organizations (NGOs), Common Initiative Groups (CIGs) are not involved in decision making as concerns solid waste management in the Municipality of Bamenda. If the bottom-top approach is applied where the individuals, households, NGOs and CIGs are engaged in decision taking as concerns solid waste management, the problems posed by solid waste in our cities and that of Bamenda in particular would be very different. The case of Cameroon's cities and that of the Bamenda Municipality is very complex today given the fact that solid waste management has been contracted to a private company HYSACAM. However, the city council still has to play its role of sensitizing, educating and informing the population of the effects of poor solid waste management. In order to facilitate the work of the private company HYSACAM, the population need to be educated on sorting of the type of waste at source and different trash cans provided for the different solid waste. To enhance solid waste management in the municipality of Bamenda, the City authorities and the authorities of the private company must work in collaboration and bring on board the individuals, households, NGOs, and CIGs to participate fully in decision taking as concerns solid waste management and also provide the basic and sufficient instruments and the required personnel for the proper solid waste management for the Bamenda Municipality. In this way the Bamenda Municipality solid waste management will not pose a problem and the municipality would have achieved the Sustainable Development Goals (SDG) 11 and 12. The bottom-top approach is very essential for the efficient solid waste management in the Bamenda Municipality and the full involvement and subsidization of NGOs and CIGs involved in solid waste management. However, in the Bamenda Municipality, a very limited number of NGOs and private companies are involved in solid waste management. Their involvement is because they are generally aware of the health risks and environmental problems caused by inadequate solid waste management. The impact of their involvement is very minimal or not felt at all by the inhabitants. A number of reasons for this minimal impact are bound which include.

4.5 Waste Generators

Waste generators largely influence the way Solid Waste Management (SWM) system is designed;

their behaviour and willingness may guide management decisions including, for example, refuse fee establishment, waste reduction, separation and waste recycling policies. In addition, generators behaviour depends on their awareness and participation level concerning SWM matters. Furthermore, the existence of a good and well-built relationship between waste generators, the SWM authorities and service providers is a success indicator when it comes to analysing the performance of a SWM system.

4.6 Effectiveness of Instruments

The legal instruments, laws, Decrees, orders concerning solid waste management highlighted above are well elaborated, spelled out in different articles for clarity and for emphasis. The legal instruments are very lofty. The issue at stake here is the implementation of the instruments put in place. The instruments seem to be paper work because the level of implementation appears to be farfetched. If the rate of implementation was as elaborated on paper, then the cities of Cameroon and Bamenda in particular would have long attained the Sustainable Development Goals (SDG) 11 and 12 and thus make the cities of Cameroon and Bamenda the case in point smart and liveable. Assessing the effectiveness of these instruments despite the clarity and the numerous articles to emphasize its importance, it is discovered that these instruments are not very effective. A number of reasons account for the ineffectiveness of these instruments in the municipality of Bamenda.

Although there is sufficient legislation on waste management, local authorities of the Bamenda City Council which is the supervisor of the solid waste collection company lack the capacity to implement them [23] and thus the waste collection company. Waste is still seen littered around the sign boards. This is an indication that there are lapses or poor enforcement of this instruction given. Sign boards posted by individuals because of the fact that waste is dumped on their lands with some traditional or magical threats to scare away the defaulters, this is still not regarded as anything to justify their non-dumping of waste at the illegal dump sites. Another major reason for the ineffectiveness of the instruments is the inadequacy in the personnel involved in waste management and the necessary and sufficient equipment for the exercise. This has resulted in operational deficiencies and organizational lapses which as a consequence have led to inadequate service

coverage. For the legal instruments to be very effective all the necessary equipment must be provided by the Companies or City Councils concerned with solid waste management to ensure regular waste removal and prompt action if any non-respect of the rules put in place are not followed. Another difficulty as to the effective implementation of the legal instruments is the inability to cover all the neighbourhood of the municipality of Bamenda. A number of neighbourhoods of this municipality are very inaccessible either due to the nature of the landscape or the unplanned housing construction. Such neighbourhoods include; Sisia I, II and III, Abangoh, Ntagham and Piyin quater. Apart from these, irregular routine collection also exists because some neighbourhoods are not included in the waste collection schedule. Such neighbourhoods in the municipality include newly build up and unplanned quarters like Ntamuche, Ntaturu and Ntassen.

There is complete irregularity in the movement of waste collection trucks. This is as a result of the organizational lapses. The itinerary for the movements of the waste collection trucks are not scrupulously supervised to ensure that all the areas to be covered that day are done. This again is the result of inadequacy in personnel. From field survey, it was discovered that the truck drivers decided on the itinerary to take especially if the track is going to be fruitful to the driver. Fruitful in the sense that the drivers chose long tracks so that once they make one trip they drained the gas in the truck and sell and claim the gas is finished. There is a lapse in the organization and follow up of the solid waste collection.

4.7 Institutional Change

The Cameroon Government have put in place some necessary legal Instruments to guide or govern waste management. The Government also earmarked ministries and institutions concerned with solid waste management and their responsibility outlined. This is to ensure that solid waste is properly managed. Solid waste management in Cameroon and the Bamenda Municipality in particular have witnessed a remarkable institutional change. In the Bamenda Municipality, solid waste management have experienced institutional change from the 1960s through the 1980s and to the present. This institutional change has been from the Bamenda town council (BTC) to the Bamenda Urban Council (BUC), through the Bamenda City

Council (BCC) to the present-day private waste management company HYSACAM. Given that the first legal instrument (Law) No 89/27 of 29th December, 1989 was ratified, enacted and adopted by the National Assembly in 1989, and the other Decrees and Orders taken after this date, it therefore meant that these legal instruments were only to be implemented (If only the Decision of applicability was passed) by the waste management institutions in the early 1990s or 2000s. By implication, this means that the solid waste management institutions before the 1980s were not guided by any of the legal instruments. Since the first legal instrument was only ratified, enacted and adopted by the National Assembly in 1989.

The institutional change, it should be noted of solid waste management from the Bamenda town Council (BTC) to the Bamenda Urban Council (BUC) and to the Bamenda City Council (BCC) was partly because of the difficulties in the solid waste management, but more because of the upgrading of the Council Status as a result of its growing population. From field observations, the possible institutional change resulting from the inability to manage the growing solid waste is the change from the Bamenda City Council (BCC) to the private solid waste management company Hygiene and sanitation (HYSACAM).

From the analyses, it is clear that only the Bamenda City Council (BCC) as an institution and present day HYSACAM probably functioned or is functioning guided by the legal instruments put in place by the Cameroon Government to govern solid waste management. Considering the level of implementation of the legal instruments by the Bamenda City Council from field survey, it is observed that the authorities to an extent tried to implement the Laws, Decrees, and Orders but however, were faced with several challenges. Another challenge that was experienced in the field came from the haphazard location of the solid waste collection dumpsites. This is shown in Fig. 2. There was no regularity in the location of the waste dumpsites in terms of the number of people to be served by each dumpsite and the distance separating one dumpsite from the other. This resulted in the creation of unauthorized or illegal dumpsites by the population in the quarters and even at bridge sites. To collect waste at these unauthorized dumpsites in the quarters which were also inaccessible and in the streams was a very big challenge.

Table 1. Legal Institutional frameworks for waste management, activities of ministerial departments related to waste management in Cameroon and Bamenda Municipality

Ministry	Responsibility in solid waste management	Statutory order
Ministry of Territorial Administration and decentralization (MINAT)	Follow up and implement regulations for organization and functioning of councils. Oversees the execution of the budget of the government, council support fund (FEICOM) Restoration of hygiene and public sanitation, supervises urban councils which are responsible for follow up and control industrial waste management, management of all public spaces and infrastructure. Sweeping of streets; collection, transportation and treatment of household waste.	Circular letter No. 0040/LC/MINAT/DCTD of 04/04/00 order No. 00072/MINAT/MINVILLE of 21/05/00, Law No. 714/23 of 5/12/74, Law No. 2004/18 of 22/07/04
Ministry of Mines Industries and Technological Development (MINMITD)	Develop strategies for industrial development and of the classified and commercial installations for pollution, security, hygiene and industrial nuisance; Define norms for industrial pollution; List of dangerous, obnoxious and polluting facilities in order to inform the public; Develops regulations governing installation and exploitation of facilities classified as dangerous, obnoxious and polluting.	Decree No. 99/818/PM of 9/11/99, order No. 13/MINME/DMG/SL of 19/04/77, 02/MINMEE/DMG/SDAMI of 4/01/9
Ministry of Economy and Finance (MINEFI)	Financial control of organization benefiting from supplementary budgets and autonomous public establishments, ie. Councils; Responsible for managing the finance Law as enacted by parliament.	Constitution Decree No. 2004/320 of 08/12/04
Ministry of Urban Development and housing (MINDUH)	Develops and implement urban restructuring, management strategies, sanitation and drainage; Defines and enforces norms of hygiene/Sanitation Collection and /or treatment of household waste; Liaises with international agencies for urban development.	Order No. 00072/MINAT/MINVILLE of 21/05/00
Ministry of Environment and Nature Protection (MINENP)	Collaborates with other agencies to define measures for the rational management of natural resources; Effective control of investigation and pollution in the field; specifies the criteria (project specific) and supervises environmental impact assessments.	Decree No. 2005/0577/PM of 23/02/05 order No. 006/MINEP of 08/03/05
Ministry of Public Health (MINPH)	Creates hygiene and sanitation units in councils; Renders technical support to the hygiene and Sanitation Units Councils, Proposes norms for collection, transportation and treatment of industrial domestic waste and employing of septic tanks; Designs and implements public education campaigns on hygiene and sanitation.	Order No. D67/NS/NN/ST/SG/BMPHP/NNPA of 11/08/87, Circular letter No. D69/N6/DMHK/SHPA of August 1980

Source: Cameroon Legal Texts on the Environment, 2018

Table 2. Legal frameworks for waste management in Cameroon

Law	Points related to waste management	Statutory order
Law relating to Environmental Management (No. 96/12 of 5/08/1996)	Modalities for the conduct of Environmental Impact Assessments (EIA) and categories of operations subject to EIA, Specifies air emission and waste water discharge standards; Set conditions for issuing authorizations for allotment and management of land for uses, i.e industrial, Urban; Prescription relating to waste elimination by persons producing or treating waste; stipulates the terms of reference for the supervision of municipal dumps by the competent authorities.	Decree No. 2005/0577/PM of 23/02/05, order No. 006/MINEP of 08/03/05
National Environmental Management Plan	Five year amendable plan; set up environment information system; preparation of bi-annual reports on the state of the environment in Cameroon, e.g identifying problems arising from urban pollution and devising suitable micro-projects to mitigate the problems.	Decree No. 2005/0577/PM of 23/02/05, order No. 006/MINEP of 08/03/05
Law relating to the installation of classified establishment (Law No. 98/15 of 14/07/98)	Stipulates two types of classified establishments (class 1 and class 11). Dumping sites are classified as class 11 establishments for which operations and Management must follow prescribed guidance. It sets out the regulations governing the installation and exploitation of facilities classified dangerous, obnoxious and polluting.	9/11/99, Order No 13/MINMEE/DMG/SL of 19/04/77, 02/MINMEE/DMG/SDAMIC of 04/01/99
National Water Code (Law No. 98/005/ of14/04/98)	Provides frame work for the exploitation of water resources including waste disposal, specifies modalities for the protection of surface and ground water from pollution (including from dump sites)	Decree No 2001/165/PM of 08/05/01
New urban strategy, 1999	Partnership among the state, local council and authorities and civil society in urban intervention in areas such as solid waste management.	N/A

Source: Manga et al., 2017

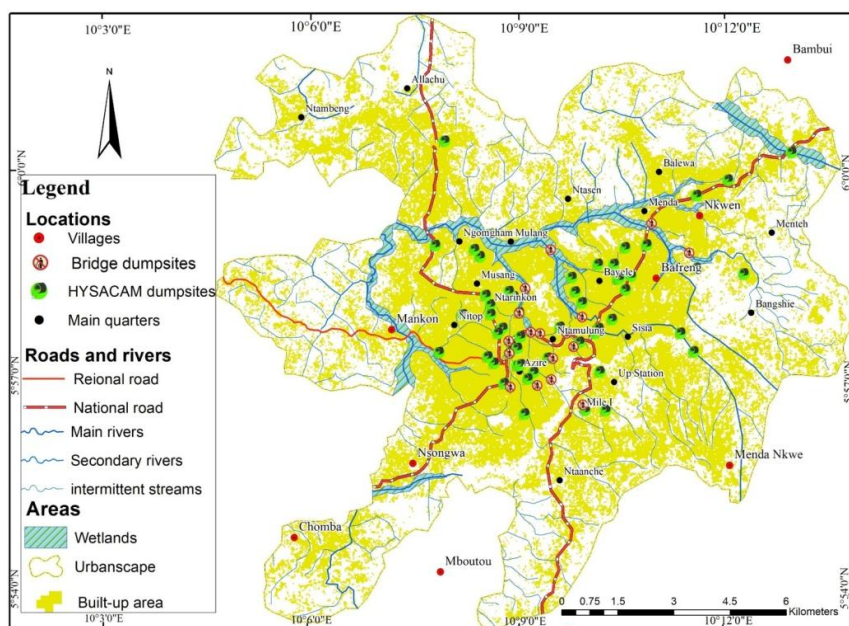


Fig. 2. Authorized and bridge point dumpsites in the Bamenda Municipality
 Source: Fieldwork 2020

Another challenge that was encountered in the field was the inadequacy of trash cans and the location of smaller trash cans in densely populated areas and bigger trash cans in sparsely populated areas. This resulted in solid waste over spilling the cans in the densely populated areas because they are small.

Apart from the above the people's culture of sending children to dispose of waste was a challenge. Most often these children could not drop the waste into the trash cans and as such waste was always seen around the trash cans on the ground. In this way the implementation of the laws and Decrees was a big challenge for the Bamenda City Council.

The Councils and City Councils are also public or state institutions that are the most concerned with solid waste management within their areas of jurisdiction. In the Bamenda Municipality, there is the City Council whose area of jurisdiction is limited to the urban area of the municipality and three other councils, that is the Bamenda I council with area of jurisdiction being the Bamenda I Sub-Division, Bamenda II council with area of jurisdiction being the Bamenda II Sub-Division and the Bamenda III council with area of jurisdiction being the Bamenda III Sub-Division. As concerns solid waste management, the City Councils manages waste found in the urban

areas while the councils are concern with managing waste within their rural municipalities. Considering that much of rural waste is biodegradable, this waste is dumped in the farms or around the surround which is of less trouble to the councils. Notwithstanding, these councils ensures that there are always monthly checks by the hygiene and sanitation department to ascertain that their municipalities are clean. This checks act like sensitization to the public to manage their waste properly. It should be noted that, the City council gives subvention to the three councils that makes up the Bamenda Municipality. This subvention amount is equal to the three councils depending also on the amount given by FEICOM. Notwithstanding the supervisory role carry out by the Bamenda City council today regarding solid waste management, before contracting HYSACAM the hygiene and sanitation company, solid waste management in the municipality was the sole responsibility of the City Council most especially the Urban areas of the municipality. Results from interview conducted in relation to how the City Council managed solid waste before the coming of HYSACAM revealed that the City Council performance was below average. The below average performance of the Bamenda City Council in the solid waste management is explained by the challenges as observed in the field (Table 3).

Table 3. Challenges faced by the Bamenda city council in solid waste management

Challenges	Frequency	Percent
Inadequate & unskilled personnel	3	15.0
Inadequate & outdated equipment	2	10.0
Poor road network	2	10.0
Difficult terrain	2	10.0
Uncooperating nature of the population	2	10.0
The culture of the people	3	15.0
Uninvolvement of individuals, NGOs and CBOs	2	10.0
All	4	20.0
Total	20	100.0

Sources: Fieldwork, 2020

A greater number of the respondents accepted that the City Council faced all the options of challenges presented on the table. That was followed by inadequate and unskilled labour and the culture of the inhabitants of the city. All the other options had the same number of respondents. However, it is clear that the city council faced the above challenges but of varying degree.

4.8 Private Institutions

Apart from the public and statutory (Para-public) companies or institutes concerned with solid waste management, there are also private institutions grouped into Non-Governmental Organisations (NGOs) and Common Initiative Groups (CIGs). The activities of these institutions unlike the public and para-public institutions are not charged with the collection, transportation and deposition. These institutions on their part try to manage solid waste within the municipality of Bamenda by recycling the solid waste. In this way, they reduce the amount of solid waste mounts on the street and in water bodies found in the Bamenda Municipality. These institutions recycle solid waste like plastics, tyres, textiles, Plastics bags (sacks and motors) and household waste (biodegradable). Non-Governmental Organisations are mainly managed by private individuals and are generally non-profits making organisations. The NGOs concerned with the solid waste management by recycling in the Bamenda Municipality are: Paradise on Earth, Strategic Humanitarian Service (SHUMAS) and the GREENS. Some of these private institutions engage in actions such as the construction of embankments using tyre wastes, as in Fig. 3.

Despite the presence of public institutions, private institutions outnumber public ones, albeit the limited recognition of their activities, as presented in Fig. 4. The reason for the unnoticed activities of the private institutions as concerns

solid waste management despite their numbers is simply because of the lack of finances, personnel, technical know-how to enable them carry out their activities of training, sensitisation, and recycling in a large scale in order to be brought into the lame light.

The regular collection, transportation, recycling and dumping of solid waste at the chosen dumpsite helps maintain good health of the population especially in terms of reducing diseases carrying vectors such as mosquitoes, flies, cockroaches, and rats. In the discharge of their functions, solid waste management institutions contribute to reduce water, air and land pollution. For example, the restriction of the deposition of solid waste in streams and rivers reduces water pollution downstream. The control of solid waste burning, air pollution is limited and by creating specific dumpsites, multiple solid waste collection points, provision of trash cans of different sizes, and the regular removal of the solid waste to the landfills helps to reduce land pollution. Furthermore, the recycling of solid waste by these institutions helps to protect the environment. For example, by using old tyres to build embankments. Solid waste products also help to beautify homes and the environment through the use of pavement tiles, wall tiles, plastic buckets to plant flowers, and the use of plastics bottles to construct hanging gardens. In this paper, we contend that the evolution of the institutional framework has been insignificant for solid waste management in the Bamenda Municipality (Table 4).

The T-test analysis at 95% confidence interval with a degree of freedom of 618, stand at 59.172 and 42.485 for solid waste management and legal and institutional framework, respectively. In the same vein, the mean difference between solid waste management and legal and institutional frameworks stand at 3.207 and 2.065

respectively. This results indicates that the evolution of the institutional framework has been insignificant for solid waste management in the Bamenda Municipality.



Fig. 3. Embankment constructed by the use of tyres
Source: Fieldwork 2020

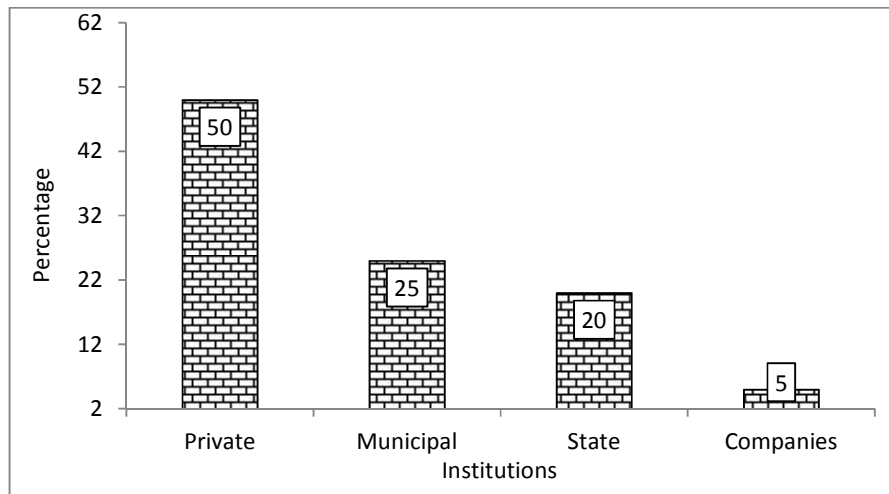


Fig. 4. Institutions involved in solid waste management in the Bamenda Municipality
Source: Fieldwork 2020

Table 4. One-Sample T-Test for legal and institutional framework for solid waste management in the Bamenda Municipality

	t	df	Sig. (2-tailed)	Test Value = 0		
				Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Solid waste management	59.172	618	.000	3.207	3.10	3.31
Legal and institutional framework	42.485	618	.000	2.065	1.97	2.16

Source: Field data 2020, generated in SPSS₂₀

5. CONCLUSION

This paper discusses the legal institutional framework of waste management in Bamenda, genesis of the legal institutions and the chronological evolution. It further discussed the legal instruments (laws, decrees, orders) and their effectiveness. Furthermore, the paper discusses the institutional bodies and policies concerning solid waste management in the Bamenda Municipality. Both public, para-public (companies) and private institutions are examined. By examining these institutions, their various contributions to solid waste management in the Bamenda Municipality is brought out. The assessment showed ineffectiveness of the legal instruments in the Bamenda Municipality in particular. Findings generated from the legal institutional framework and regulatory instruments reveals more of policy directives that calls for proper legislative and regulatory framework on waste management are more of principles than practice. The ineffectiveness of these instruments in Cameroon and the Bamenda Municipality in particular is as a result of inadequate legal institutional setup, no courts and city judiciary system to handle environmental issues (solid waste), irregular or poorly enforced laws, inaccessible neighbourhood, organizational lapses. In this study, we argue that the institutional change process in waste management should strive towards the introduction of economic incentives that can motivate urban dwellers to fully engage in the process. To ground this assertion, we call for further empirical evidence to determine the right business-oriented waste management models.

DISCLAIMER

There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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