

Management of Solid Domestic Waste in Some Municipalities of the City of Kinshasa: Stakes and Perspectives

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Abstract

The present study on the management of solid household waste in some municipalities of Kinshasa city relates respectively to the establishment of the sector and chain of solid household waste management and also to the consideration of the economic opportunities that can offer the sector of waste in terms of energy and raw materials. The challenges remain significant, as the resources of decentralized entities remain constrained and limited, as their funding base is reduced. State subsidy funding, which is often necessary to supplement limited local resources, cannot, moreover, be regarded as a sustainable solution. Factors influencing the presence of waste in the municipalities surveyed include the inadequacy of waste management concepts, an understanding of the concept of waste and a lack of environmental protection education. Thus, to protect and improve the living environment, recovery must be integrated into the waste management chain. The concept of the sector, which makes it possible to integrate the various actors and to reason throughout the value chain, is not yet sufficiently developed in these municipalities. Therefore, the sustainable management of solid waste requires the reconciliation of perfect knowledge about solid waste and values in accordance with the logic of "R". Under the law, sanitation operations in the municipalities surveyed are initiated, decided and organized by the central and provincial authorities. These operations have concurrent jurisdiction between the central power and the provinces. The biggest obstacles in the implementation of these sanitation operations are institutional, material, financial and cultural.

Keywords

Domestic Strong Garbage, Lasting Management of the Garbage, Waste Management, Environment, Purification

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1. Introduction

The profusion of waste disseminated in the city of Kinshasa has negative consequences on the population and the environment following its mismanagement. In fact, the city produces 10,000 tons of waste daily, consisting mainly of 65% organic materials, 15% plastics, 7% metals, 6% textiles, 4% inert materials, 2% glasses and 1% others. according to ex-RAPTK [1, 2], thus constituting a focus and

a source of germs and parasites harmful to human health and the environment. You only have to walk through any corner of the city to see this problem: garbage piling up in residential areas, along roads, blocked streams, etc.

The issues affecting the management of urban waste and, by extension, the planning and management of the urban

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environment are among the most complex to which urban managers must respond because of their effects on human health, sustainable development and the situation. financial planning of cities [3]. If waste management in the city of Kinshasa appeared yesterday as an activity of a purely technical, organizational and financial nature, we now realize that it has an inscribed cultural dimension and that it constitutes a very important lever of power [4].

In this context, it would be wasted effort to analyze the problem of solid waste management in a classic way, focusing on the unstructured description of the means and results. The governance-based approach seems appropriate because it is based on a political analysis of the issues, reports and strategies of the different actors of the management system, and applies the performance evaluation of criteria such as transparency, efficiency, efficiency, feasibility and responsible participation [4].



Figure 1. Impressive presence of waste in transit landfills in the City of Kinshasa.

The challenge is huge for the City of Kinshasa, which lacks resources and cannot afford the technical solutions of cities in industrialized countries. On the other hand, it has significant advantages such as the existence of many small private companies and community associations which are already involved in the collection and recycling of waste [5].

Waste is inevitable. However, due to their diversity, quantity and composition, they are today considered to be a real threat to the Kinshasa environment. They are an immediate nuisance when it comes to the smell of household (urban) waste; the nuisance becomes more insidious for the Kinois population, and therefore more subject to fantasies, when it comes to pollution generated by toxic or radioactive waste. As this nuisance, caused or not by effective pollution, becomes too strong, waste takes center stage in Kinois, sometimes at the risk of creating constraints such that it becomes impossible not to violate them. Formerly called "Kin the beautiful", this name is far from being a reality of everyday life. This is only a distant memory in the language

of Kinois [6]; which gave way to "Kin the trash" or to a cupidosphere.

In view of the above, the following questions should be asked:

- What are the factors influencing the impressive presence of solid waste in the city of Kinshasa in general and in the aforementioned municipalities in particular?
- Can recovery help to improve qualitatively and quantitatively the management of solid waste in the environment of the city of Kinshasa in general and in the aforementioned municipalities in particular ?

Correlating to the concerns raised, we assume that:

The factors influencing the remarkable and cumbersome presence of household solid waste would on the one hand be the lack of a municipal policy for the sustainable management of household solid waste including planning, budgeting, execution, control and regular monitoring and on the other hand the ignorance of municipal authorities and households of this resource, solid household waste.

Thus, to achieve sustainable management of household solid waste, ecological sanitation should be an integral part of the management process at all levels, because it is the key determinant of both equity and the capacity of the municipality to manage itself [7]. Mesological education which integrates environmental protection, disease prevention, accessibility, acceptance should also be part of it. However, environmental protection means reducing human pressure on the environment to maintain balance [8].

Recovery could be the appropriate solution to guarantee health and environmental protection.

2. Materials and Methods

The methods used in this study are:

- The structural-functional method relating to the evaluation of the organization of the functioning of the various municipal services as well as household waste management [9];
- The analytical method which focused on a systematic analysis of the household waste management policy, particularly in the municipalities surveyed;
- The documentary method, which consisted of a systematic review of data from the scientific literature relating to the assessment of the effects of waste on human health and the environment as well as the compilation of the constituent elements of municipal waste policy;
- The method of direct observation and interview which

made it possible to study and analyze the following parameters of interest: sources of origin of the waste, waste management (means of disposal, the price of disposal, management of faeces, management infrastructure and equipment, treatment and recovery), the most common diseases in the environment.

- e. The communes of Barumbu, Bumbu, Kasa - Vubu and Makala were the study environment for this research. To collect the information we needed, we visited the four aforementioned municipalities. The communes thus selected, we drew on average 37 households per entity, that is to say in the communes of Barumbu and Kasa - vubu we interviewed 38 households per commune while in the communes of Bumbu and Makala we interviewed 37 households per municipality, which gave us a sample of 150 households. The respondents are the heads of households (male or female) or any other adult person living in the household.

3. Results

3.1. Study Framework

The present study was carried out in the communes of Barumbu, Bumbu, Makala and Kasa - vubu, in the city of Kinshasa.

3.2. Type and Period

The present work is a descriptive study of solid household waste management linked to anthropogenic pressure. It covers a period from July 2017 to September 2019.

3.3. Inclusion Criteria

To be included in the study, respondents had to:

- Be part of the inhabitants of the aforementioned municipalities;
- Have lived for more than 5 years in the community;
- Be aged 18 and over.

3.4. Collection of Data

We used:

- Answers provided by the target population to the questionnaire of our survey; and
- Other information such as general knowledge on sanitation, the water cycle, the generative powers of the ecosystem,

It should be noted, however, some difficulties encountered during data collection, in particular:

- The mistrust of the respondents;

- The reluctance of the respondents.

3.5. Study Parameters

Sociodemographic characteristics: sex, age, marital status, level of education and size of households were studied.

3.6. Parameters for the Management of Solid Waste of Interest Study

The data related to solid waste management collected are as follows:

- Knowledge of solid waste;
- The type of waste;
- Waste collection equipment;
- The practice of the selective waste system;
- Waste disposal systems;
- Frequency of waste disposal;
- Solid waste management;
- Notion on waste recovery;
- Etc.

3.7. Statistical Analyzes

The collected data was entered and analyzed using SPSS 16.0 statistical analysis software and Excel.

The variables are described by frequency and percentage; and our results are presented in the form of figures and tables.

3.7.1. Presentation and Interpretation of the Results

- Gender of Respondents

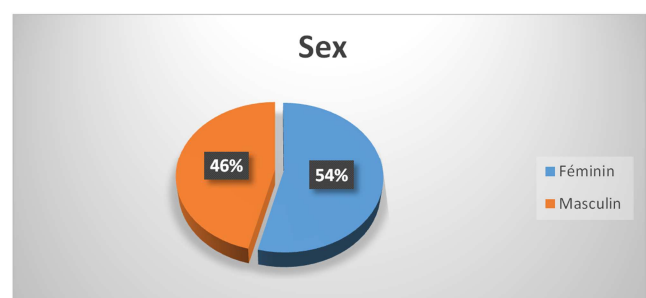


Figure 2. Distribution of subjects by sex.

The figures in this figure show that 81 subjects (or 54%) are female against 69 subjects (or 46%) are male. This shows us that in all the districts surveyed, the problem related to the management and recovery of solid household waste is of more interest to women than to men.

The data relating to the distribution of subjects according to their age are given in Table 1 below.

(ii) Age of Respondents

Table 1. Distribution of subjects by age.

Variable	Modalities	Strengths	Percentage
Age range	20 - 24 years	34	23,0
	25-29 years	19	13,0
	30-34 years	17	11,0
	35-39 years	23	15,0
	40-44 years	25	17,0
	45-49 years	11	7,0
	50-54 years	6	4,0
	55-59 years	15	10,0
Total		150	100,0

The age of our respondents was between 20 and 59 years old. The age group between 20 and 24 years (or 23%) was predominant, followed respectively by the age group between 40 and 44 years (or 17%) and between 35 and 39 years (or 15%).

Data on the civil status of respondents are shown in Figure 3 below.

(iii) Civil Status of the Respondents

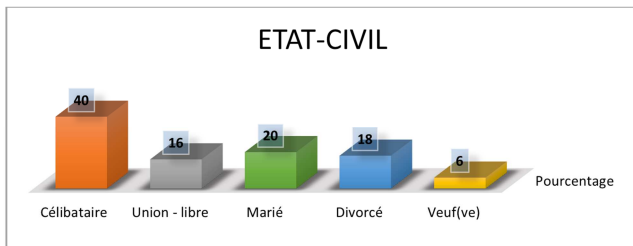


Figure 3. Distribution of individuals by civil status.

The figure above shows that 60 subjects (or 40%) are single, 30 subjects (or 20%) are married, 27 subjects (or 18%) are divorced, 24 subjects (or 16%) in a common-law relationship and 9 subjects (6%) of widowers.

Data relating to the educational level of respondents are shown in Figure 4.

(iv) Education Level of Respondents

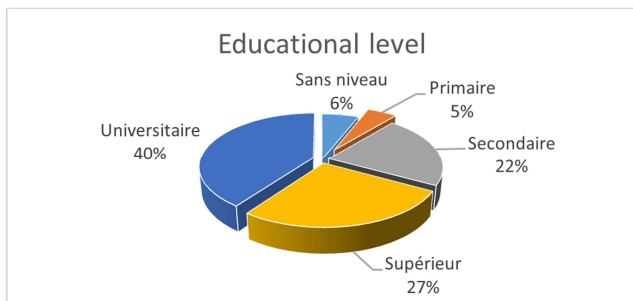


Figure 4. Educational level.

The figures included in the figure above illustrate that 60 respondents (i.e. 40%) are academics, 40 subjects (i.e. 27%) are graduates, 33 respondents (i.e. 22%) are state graduates, 8 subjects (or 5%) are those who have completed the primary

cycle against 9 respondents (or 6%) without any level of education.

The data relating to the size of the households of the respondents are given in Table 2.

(v) Household Size of Respondents

Table 2. Distribution of subjects according to the size of their household.

Variable	Modalities	Strengths	Percentage
Taille du ménage	1 - 3	36	24
	4 - 6	75	50
	7 - 9	21	14
	10 et plus	18	12
Total		150	100

The table above indicates that 75 respondents (or 50%) support at least 6 people, 36 respondents (or 24%) support at least 3 people, 21 respondents (or 14%) support at least 9 individuals and 18 respondents (or 12%) support more than 10 people.

Data relating to the respondents' knowledge of household solid waste are shown in Table 3

(vi) Knowledge of Respondents on Household Solid Waste

Table 3. Distribution of respondents according to knowledge of household solid waste.

Variable	Modalities	Strengths	Percentage
Knowledge of solid waste	Yes	110	73,0
	No	40	27,0
Total		150	100,0

The table above shows that 110 subjects (or 73%) know or have an idea about household solid waste against 40 subjects (or 27%) who do not know.

The data on the type of waste most produced in the households of the respondents are given in Table 4.

(vii) Type of Waste Most Produced in the Household

Table 4. Distribution of individuals according to the type of waste most produced in the household.

Variable	Modalities	Strengths	Percentage
The type of waste most produced in the household	Strong garbage	120	80,0
	Liquid garbage	15	10,0
	Sparkling garbage	6	4,0
	Dangerous garbage	6	4,0
	No idea	3	2,0
Total		150	100,0

The figures shown in the table above illustrate that 120 subjects (or 80%) produce more solid waste, 15 subjects (or 10%) generate liquid waste, 6 subjects (or 4%) each produce gaseous waste and hazardous waste against 3 subjects (or 2%) who have no idea about this type of waste.

Table 5 shows the data relating to the collection materials for solid household waste used by the respondents.

(viii) Solid Household Waste Collection Equipment

Table 5. Distribution of respondents according to household solid waste collection equipment.

Variable	Modalities	Strengths	Percentage
Materials used to collect waste	Seal made of metal without lid	36	24,0
	Seal made of metal with lid	21	14,0
	Seal in plastic without lid	54	36,0
	Seal in plastic with lid	13	9,0
	Cardboard	26	17,0
Total		150	100,0

The table above shows that 36% of the subjects use the plastic buckets without a cover to collect waste, 24% of the subjects use the metal buckets without the cover, 26% of the subjects use the cartons, 14% of the individuals use the boxes. metal seals with lid and 9% use plastic seals with lid.

Data on the practice of the selective household solid waste system are given in Table 6.

(ix) Existence of the Selective Waste System in Households

Table 6. Distribution of individuals according to the existence of the selective waste system.

Variable	Modalities	Strengths	Percentage
Existence of the selective waste system.	Yes	65	43,0
	No	85	57,0
Total		150	100,0

The table above shows that 85 individuals (or 57%) do not practice a selective waste system against 65 individuals (or 43%) who consider that they practice the selective waste system.

Table 7 shows the data on the reasons for not practicing the selective system of solid household waste by the respondents.

(x) Non-practice of the Selective Waste System

Table 7. Distribution of subjects according to the non-practice of the selective waste system.

Variable	Modalities	Strengths	Percentage
The reason for the non - practice of the selective waste system.	Insufficiency of the materials	53	62
	Insufficiency of knowledge concerning the garbage	15	18
	Ignorance	9	11
	Other to specify	8	9
Total		85	100,0

Examination of the above table reveals that 53 individuals (i.e. 62%) attest to the insufficiency of materials, 15 individuals (i.e. 18%) confirm insufficient knowledge of waste, 9 individuals (i.e. 11%) I 'ignore against 8 individuals (9%) who put forward other reasons than those mentioned above.

Data relating to the subscription to a waste collection service is shown in Figure 5.

(xi) Subscription to a Waste Collection Service

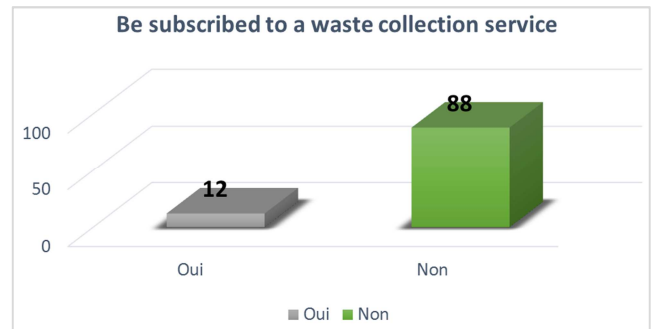


Figure 5. Subscription to a waste collection service.

Question: Do you subscribe to a waste collection structure / service?

The figures shown in this figure illustrate that 132 subjects (or 88%) do not subscribe to a waste collection structure against 18 subjects (or 12%) who confirm to be subscribed.

The data relating to the methods used by the subjects to dispose of household solid waste are shown in Table 8.

(xii) Disposal Systems for Solid Household Waste

Table 8. Distribution of individuals according to waste disposal methods.

Variable	Modalities	Strengths	Percentage
The methods of elimination of the garbage	Incineration	93	62,0
	Pits to detached garbage	3	2,0
	Burying in soil	48	32,0
	Dating	6	4,0
Total		150	100,0

The table above shows that 93 subjects (62%) incinerate solid waste, 48 subjects (32%) bury it, 3 subjects (2%) use separate waste pits, 6 subjects (4%) compost them.

(xiii) Frequency of Evacuation of the Strong Domestic Garbage

Table 9. Distribution of the topics following the frequency of evacuation of the strong garbage.

Variable	Modalities	Strengths	Percentage
Frequency of evacuation of the garbage	Every day	63	42,0
	Every week	73	49,0
	Every other week	9	6,0
	Indeterminate	5	3,0
Total		150	100,0

This picture denotes that 73 individuals (either 49%) evacuate their garbage every week, 63 individuals (either 42%) empty them every day, 9 topics (either 6%) drain them every other week against 5 topics (either 3%) that evacuate them in an indeterminate manner or don't have a stationary frequency of evacuation of their loss.

Data on the price paid by race by them investigated for evacuation their strong domestic garbage are represented in the table 10.

(xiv) Price of Evacuation of the Garbage by Race

Table 10. Distribution of the individuals according to the price of evacuation of the garbage by race.

Variable	Modalities	Strengths	Percentage
The price of evacuation by race	100 Fc – 300 Fc	90	60,0
	400 Fc – 600 Fc	36	24,0
	700 Fc – 900 Fc	12	8,0
	1000 Fc et plus	12	8,0
Total		150	100,0

The numbers contained here in the picture - high reveal that 90 individuals (either 60%) pay at least 300 Fcs by race to evacuate the garbage, 36 individuals (either 24%) fulfill by 600 Fcs the race, 12 individuals (either 8%) pay by race at least 900 Fcs against 12 other individuals, who pay for more than 1.000 Fcs the race.

The table 11 presents the relative data to the management of the fecal matters of them investigated.

(xv) Management of the Fecal Matters

Table 11. Distribution of the topics following the management of the fecal matters.

Variable	Modalities	Strengths	Percentage
The management of the fecal matters	Buries	12	8,0
	Septic tank	132	88,0
	Gutters	6	4,0
Total		150	100,0

The picture above watch that 132 topics (either 88%) use some septic tanks, 12 topics (either 8%) practice the burying against 6 topics (either 4%) that use the gutters to evacuate the fecal matters.

Data on the knowledge of the topics on the Direction of purification (DAS) are taken in the table 12.

(xvi) Knowledge of the Purification Direction (DAS)

Table 12. Distribution of the topics according to the knowledge of the purification Direction (DAS).

Variable	Modalities	Strengths	Pourcentage
Knowledge of the DAS	Yes	30	20,0
	No	120	80,0
Total		150	100,0

The picture demonstrates above that 120 topics (either 80%) don't know the Direction of purification against 30 topics (either 20%) that estimate to know it.

The table 13 takes the data according to which the mismanagement of the strong domestic garbage constitutes a problem of public health.

(xvii) Mismanagement of the Garbage Constitutes a Problem of Public Health

Table 13. Distribution of the individuals according to whether the mismanagement of the garbage constitutes a problem of public health.

Variable	Modalities	Strengths	Percentage
The mismanagement of the garbage constitutes a problem of public health	Yes	135	90,0
	No	15	10,0
Total		150	100,0

The numbers contained here in the picture - high, illustrate that 135 topics (either 90%) confirm that the mismanagement of the garbage constitutes a problem of public health against 15 topics (either 10%) that ignore it.

The relative data to the consequences of the mismanagement of the strong domestic garbage are taken in the table 14.

(xviii) Consequence of the Mismanagement of the Garbage

Table 14. Distribution of the topics according to the consequence of the mismanagement of the garbage.

Variable	Modalities	Strengths	Percentage
The consequences of the mismanagement	Bad odor	42	28,0
	Proliferation of the flies and other vectors of the illnesses	63	42,0
	Nuisance	36	24,0
	Atmospheric pollution	9	6
Total		150	100,0

Of the results of the picture above, indicate that 63 topics (either 42%) attest that the consequences of the mismanagement of the garbage would be the proliferation of the flies and other parasitic vectors; 42 topics (either 28%) estimate that it would be the bad odors; 36 topics (either 24%) point the nuisance and finally 9 topics (either 6%) think to the atmospheric pollution".

The table 15 presents data on the notions of valorization of the strong domestic garbage.

(xix) Notion of the Valorization of the Strong Garbage

Table 15. Distribution of the topics according to the notion of the valorization of the strong garbage.

Variable	Modalities	Strengths	Percentage
Knowledge on the valorization of the garbage	Strong Reuse	28	19,0
	Retraining	15	10,0
	Transformation	39	26,0
	Re-use	5	3,0
	Manure	39	26,0
	Compost	15	10,0
	Other (to specify)	9	6
Total		150	100,0

The picture indicates above that 39 topics (either 26%) speak respectively of transformation and manure, 28 topics (either 19%) certify reuse, 15 topics (either 10%) attest to each the retraining and compost, 5 individuals (either 3%) confirm the re-use against 9 individuals (either 6%) that pushed other reasons that those evoked.

The relative data to the improvement of the management of the strong domestic garbage are represented in the table 16.

(xx) What It Is Necessary to Make to Improve the Management of the Strong Domestic Garbage

Table 16. Distribution of them investigated according to the improvement of the management of the strong domestic garbage.

Variable	Modalities	Threngths	Percentage
Proposition of management of the strong domestic garbage	Train the staff of the DAS	36	24,0
	To equip the services by the adequate materials	15	10,0
	To reinforce the public health service	25	17,0
	To allocate a consequent budget for the evacuation and the elimination	25	17,0
	To create an independent service	44	29,0
	Other (to specify)	5	3,0
Total		150	100,0

The figures included in this table indicate that 44 subjects (or 29%) propose the creation of a separate service, which is independent of municipal policy, 36 subjects (or 24%) speak of the training of DAS personnel, 25 subjects (i.e. 17%) propose a strengthening of the hygiene service, 25 other subjects ask to allocate a substantial budget for the evacuation and elimination of waste, 15 subjects (i.e. 10%) require the equipment of the sanitation service using adequate materials against 5 subjects (ie 3%) who did not respond to our concern.

The data relating to the link between waste collection equipment and the practice of the selective waste system are shown in Table 17.

(xxi) Lie Between the Materials of Collection of the Garbage and the Existence of a Selective System of the Garbage

Table 17. Tie between the materials of collection of the garbage and the existence of a selective system of the garbage.

Material of collection of the garbage	Existence of a selective system of the garbage		Total
	Yes	No	
Bucket made of covered metal	8	26	34
	25%	27.10%	26.60%
Bucket made of metal without funds	4	13	17
	12.50%	13.50%	13.30%
Bucket in covered plastic	8	9	17
	25.00%	9.40%	13.30%
Bucket in plastic without funds	12	32	44
	37.50%	33.30%	34.40%
Deposit to soil	0	16	16
	0.00%	16.70%	12.50%
Total	32	96	128
	100.00%	100.00%	100.00%

$\text{Khi}^2 = 9,925$ ddl = 4.

34% of the households don't think that the materials of collection of the garbage are the buckets in plastic without funds. The confrontation of the value of χ^2 calculated (9,925) with a degree of freedom of 4 superior to χ^2 tabular (9,487) to the doorstep of 0.05 (acceptable of H_0), indicate that there is a strong dependence between the two combined variables. The practice of the selective system is influenced strongly by the materials of collection of the garbage.

3.7.2. Analysis of the Results

He/it is evident from our investigation that 54% of the topics are of feminine sex against 46% of masculine sex. This situation explains itself by the fact that in our society, the question bound to the management of the strong domestic garbage is reserved to the women more that to the men because these are the women who take care of the domestic tasks.

Age of our investigated was understood between 20 and 59 years. The age group understood between 20 and 24 years had a predominance (either 23%) on the set of the other age groups.

The majority of our investigated are of the academic (either 40%), followed of the stepped up (either 27%), of the state graduates (either 22%) and of those that made that the primary cycle (either 5%).

The middle size of the household of our investigated was of 5 people, what reflects the middle size of the African households. The growth of the population and the development of the needs come with a production increased of the garbage, [10] and of the habitat demand. Our environment is influenced very strongly by the human activities. The size of these activities is in direct relation with the development of the population and the solicitation of the natural resources that ensues some [11]. It is obvious to limit the births in the goal to balance the domestic financial income and to save the environment of the deterioration illicit [12].

The households produce the strong garbage more (80%) that the liquid garbage (10%) and even less the sparkling garbage (4%) and dangerous (4%).

Since a certain time in the City of Kinshasa, one only uses the packings in polypropylène to envelop the products or articles, [13]. This craze has ominous consequences notably on the environment and on the health of the population since the majority of the inhabitants doesn't have notions of lasting management of the garbage. The reality is as after the recuperation of the article, the sachets are thrown to soil, in tunnels and gutters, preventing, so the circulation and the infiltration of waters and causing, at the time of the big rains,

of the floodings having for consequences of enormous losses in tangible assets and sometimes, in human lives.

The liquid garbage are a little unknown by the households because most these households don't know what is a liquid loss. They throw them on soil, in gutters, of the rivers,.... These garbage are the gray waters coming from the domestic activities as the dish, the kitchen, the laundry and the shower and the black waters, that are a mixture of excreted, of hunt waters (for the toilets to hunt) and of waters of housekeeping materials anal. The sloppy waters regroup all waters descended of the domestic activities (gray waters and black waters) [14]. Kinshasa in general and the townships investigated in particular endure the lack of the basis infrastructures capable to serve to evacuate the sloppy waters (waters of the floodgates, pluvial waters, domestic sloppy waters). These townships don't have precise system of treatment of sloppy waters. This situation constitutes a major problem of public health.

The households use the buckets in plastics, in metal with or without lid. They also use some cardboards to collect the garbage and don't practice the selective system of the garbage. However, this practice of selection of the garbage constitutes a non negligible determinant in the process of lasting management of the garbage because it makes reference to the consideration and to the apprehension that one makes domestic garbage. For the Kinnoises, a loss is considered like something or a non exploitable part that one gets rid after the use of the part judged useful without care, because that is not worth anything anymore whereas coins other heaven, the loss is a residual of which one doesn't want and that one cannot exploit anymore at home. It is also about a precious product, capable to be valorized and to be exploited in other sectors. Reason for which the citizen gets rid of his garbage with in head the idea that he takes care of it because their destination is surely in a place of treatment or valorization. He/it places them in a place appropriated in a selective manner.

To eliminate the strong garbage, the households incinerate them or bury them and practice the defecation in the open. These gestures are probationary of pollution of the environment if it is not executed with care, notably the incineration, that must have a combustion to 100% not to soil the immediate environment and the defecation must follow the ecological and sanitary principles not to pollute soil and the atmosphere. The illnesses caused by the microbes and the present verses in the excrements are a source of constant discomfort for millions people. These illnesses can provoke of the indisposition years and can lead to other problems of health as the dehydration, anemia and the malnutrition. Of the serious illnesses bound to purification, as the cholera, can propagate themselves quickly and drive people expeditiously

to the death. The pathogenic germ and the parasite are of the causal agents of a big variety of included illnesses of the diarrhea and the malnutrition, [14].

To evacuate their strong garbage, the topics don't respect a regular frequency. Indeed, some make it in a daily manner, others make it again of weekly manner and others of irregular manner, every category paying on average for 400 Fcs by race. The frequency of evacuation of the garbage is tributary of the material, financial and human means.

The mismanagement of the garbage drives to the development of the pathogenic and other illnesses, notably the malaria, the typhoid, the B hepatitis, etc. [15] and a bad purification has some heavy economic consequences, valued to 1.5% of the P. I. B world [15], in the setting of this survey, the consequences of the mismanagement of the garbage observed by our investigated are distributed of the following manner: 63% speak of a proliferation of the flies and other vectors of the illnesses, 42% attest that these are the bad odors, 36% speak of some nuisances whereas 9% speak of the atmospheric pollution. In spite of this report makes by our investigated, these last continue to throw the garbage in gutters, tunnels or on the floor. For them, the garbage are cumbersome from where it is necessary to rid itself/themselves of it with or without precautions, whatever is the consequences that can derive some of it. Therefore, they often fall sick and spend a lot of money for the cares of health.

According to the WHO, a bad access to water (absence, quality), to hygiene and to purification is the first reason of mortality in the countries developmental [15]. The water of drink, hygiene, the cleanliness, the healthiness and the food influence the health of the populations directly, but also their economy, because 88% of the cases of diarrheas in the world are assigned to the non drinkable water, the inadequate purification or a hygiene insufficient, [15].

The majority of our investigated don't know the Direction of purification, however it is the normative and specialized Direction concerning purification of the middle. She/it has among others for assignments: the conception and development of the politics and the national strategies having milked to the purification of the middle and having assured the of it setting in work, to assure the works of purification of the middle and the follow-up of their setting in work, ... This state-controlled service is nearly underestimated notably by the population following the linked constraints to the financial means and material permitting his/her/its good working.

Only 10% of them investigated practice the technique of dating to valorize their garbage. However, this technique is a manner to valorize the putrescible or biodegradable strong garbage. She/it can constitute a source of income at the same

time for the households. The cities are characterized by a consumption increased of resources. It entails the garbage that generate environmental problems due to the man's ignorance that, instead of creating some cycles as the fact the nature, product rather of the lines that succeed to the pollution. When a population is poor and educated insufficiently, it is difficult to ask him to treat the garbage for lack of financial means. And yet thanks to the valorization, the garbage can be a source of income while preserving the human health. Thus, the effort to recycle the garbage in imitation of the natural cycle should be the symbol of work, of health, of progress and no of poverty [16].

He/it appears clear today, that it is necessary to endow the entities decentralized of the coercive enactments capable to help the sector of environment to strengthen. In a general manner, interventions in favor of hygiene and purification require the setting up of the services that uses an adapted and progressive gait.

The present state of the deterioration of the environment certainly imposes efficient, educational measures, but especially coercive that recommend the correction and the prevention of the thrust of the disaster at a time. It is here that the legislator finds the whole range of his/her/its implication in the common efforts to purify the middle of life, [2].

The politics of lasting management of the environment in Democratic Republic of Congo, RDC finds its substance in the texts of the law - setting n° 11/009 of structural July 2011 09 on the relative fundamental principles to the protection of the environment. This law, fix the general norms aiming to drive the lasting management of the environment on the whole national territory [17]. moreover, she sees herself/itself completed by other laws carrying by turns on the conservation of the nature, on electricity, on the hydrocarbons, on water and on the purification of the middle where the protective questions of the environment are called a transverse way.

As one can notice it so easily, the sector of environment is very vast and varied. Thus, to the look of the legislative production and règlementaire here - enumerated loud, the specific domain of purification remained again little evoked. However, while waiting for a specific legislation on purification, the Congolese national minister having the environment in his/her/its assignments produced an important document titled " the national politics of purification (PNA) ", that describes the big lines of his/her/its engagement in terms of objectives, strategies and efficient partnership. Essentially, the PNA aims to warn the production of the garbage, to encourage the retraining of the garbage and to guarantee their elimination without danger. To this stage, he/it only constitutes a setting of orientation of a management rational and lasting of the sector

of purification, and open the way to the organization of an institutional and legal setting in order to improve the performance in the sector. She/it is also the pledge of a better scheduling and programming of the sectorial actions [2].

Unfortunately, this tool yet important doesn't make the object of popularization not at all since his/her/its adoption and his/her/its publication by the central government in December 2013.

Also, being about the purification of the middle in RDC, the Constitution and the law on the free administration of the provinces specifies that this matter is expertise competitor's between the central power and the provinces, [2].

As we can note it the legal emptiness doesn't exist in general concerning management of the environment and of the management of the strong garbage in particular. However, the question bound to the management of the strong garbage remained in general major in the city of Kinshasa and in the Townships investigated in particular.

Otherwise, the animators in charge of management of the township don't succeed in putting in application the rules decreed by the legislator concerning management of the garbage.

4. Conclusion and Recommendations

At the end of our research, he/it proves to be that the factors influencing the presence of the garbage notably: the insufficiency of the relative notions to the management of the garbage, the apprehension of the notion of the garbage and the lack of relative education to the environment, constitute the key factors of the presence of the domestic garbage and the valorization would improve quantitatively and qualitatively the management of the garbage that if the population mastered it.

Another report makes in this survey is that the population ignores the existence of the purification Direction, however it is the state-controlled service authorized to manage the environment. This ignorance is justified notably by the insufficiency of his/her/its intervention means.

The inapplication of a good politics of lasting management of the garbage drives to such situation of discomfort and insalubrity. However, the general assessment of the insalubrity in Kinshasa drove the provincial authorities to initiate an activity of mentality change to limit the rise quickly of this situation, in order to protect the man and his/her/its vital space. To perpetuate the healthiness in the city a system of 'Salongo' (manual system of purification) obligatory has been enacted every Saturday of 7 hours at 10

o'clock by the decree n°SC/88 of May 10 2010 structural collective measures of purification in Kinshasa. This law solicited the effective implication of all municipal authorities as well as those of the police. Well more, she/it foresaw financial sanctions" with regard to the offenders, going of 5 to 100 American dollars for the houses of dwellings, and of 100 to 1000 American dollars for the commercial houses and services, and 1.000 to 10.000 American dollars for the industries. In case of recidivism, the amount will be carried to the double of the original amount [18]. However, the population remains always idle and indifferent facing this practice.

It suits to note that the operations of purification in the townships investigated are impulsées, settled and organized only by the authorities in accordance with the organic law n°08/016 of October 7, 2008, carrying composition, organization and working of the Territorial Entities Decentralized and their reports with the state and the Provinces, in his/her/its articles 50, 53, 59 and 60, the present expertises of the Township as Decentralized Administrative Entity only cover very partially, the devolved assignments to the township to the term of the law above mentioned. The absence of the organs as foreseen in the law 08/016 of October 7, 2008, to know the Communal council and the Local Ministerial College made reduce the efficiency of the Township, because the assignments of these organs are exercised again by the City [19].

The challenges to raise remain important, because resources of the decentralized entities stay constrained and limited, because their plate of financing is reduced. Financing by subsidy of the state often necessary to complete the limited local resources can, otherwise, not to be considered like a perennial solution.

The notion of path, that permits to really integrate the different actors and to reason on the whole chain, is not again sufficiently developed in these townships.

In spite of all these challenges, the sector of the garbage can offer real economic opportunities in terms of energy and raw materials. The garbage constitutes, indeed an interesting resource; their treatment can become a profitable activity that could clear on the setting up of a lasting management of the sector.

Of a general manner in the city of Kinshasa, we need some men capable to change the structures and mentalities of managed them. The lasting management of the strong garbage requires the conciliation of the knowledge perfect on the strong garbage and the securities according to the logic of the " R ". This being, the perfect knowledge means mastery of the production path, circuit of consumption and cycle of the effective elimination of the garbage while the securities mean valorization, transformation and other use in the only goal to

guarantee and to maintain the ecological balance.

Conflict of Interest

We declare on honor that the present survey doesn't make the object of no conflict on interest of some nature that it is.

References

- [1] KALONJI, Thierry, (www.vironews-rdc.org, 31 octobre 2015).
- [2] ETUMANGELE A., (2017). Mon projet Ecologique 2, Abrégé des techniques d'Assainissement du milieu en RDC, CRESEDIP-ISP/Gombe, Kinshasa.
- [3] DIABAGATE S., (2007). Assainissement et gestion des ordures ménagères à Abobo, cas d'Abobo-Badule, Université d'Abidjan Cocody, Côte d'Ivoire.
- [4] KASSAY NGUR-IKONE J., (2015). la gestion des déchets plastiques à Kinshasa: un autre défi environnemental à relever dans la conception des villes durables, INDD.
- [5] ONIBOKUN A. G., (2001). La gestion des déchets urbains: Des solutions pour l'Afrique, édition KARTHALA et CRDI.
- [6] LELO NZUZI. (2008). *Kinshasa, ville et environnement*, Paris, le Harmattan.
- [7] GIRAULT YVES et LUCIE SAUVE, (2008). L'éducation scientifique, l'éducation à l'environnement et l'éducation pour le développement durable, Croisements, enjeux et mouvances, ASTER.
- [8] ESREY Steve, GOUGH Jean, RAPAPORT Dave, SAWYER Ron, MAYLING Simpson – Hébert et VARGAS Jorge. (1998). *Assainissement écologique*, Sida Uno Winblad, Stockholm, SUEDE.
- [9] MULUMA, (2003). Guide de recherche en sciences sociales et humaines, Ed. OGEDES, Kinshasa.
- [10] BEAUX J-F., (1998). *Environnement*, édition NATHAN, France.
- [11] BLOT, Denis, (<https://reporterre.net/Personne-ne-peut-dire-que-les-pauvres-sont-plus-sales-que-les-riches>, 23/05/2019).
- [12] PROUDON J., (1954). *la croissance d'un peuple*, PUF, Paris.
- [13] KATALAYI MUTOMBO H., (2014), *Urbanisation et fabrique urbaine à Kinshasa: défis et opportunités d'aménagement*, Géographie, Université Michel de Montaigne - Bordeaux III.
- [14] GABERT J., (2014). Memento de l'Assainissement: les filières d'assainissement, Editions Quae, éditions de GRET, France.
- [15] OMS et UNICEF (2015). *Progrès en matière d'assainissement et d'eau potable: mise à jour 2015 et évaluation des OMD*, Unicef/OMS.
- [16] BINZANGI K. et FALANKA Z., (2014). *Réflexions sur l'évolution de l'environnement de Kinshasa: d'une portion biosphérique à une cupidosphere*, Cahiers congolais de l'Aménagement et du Bâtiment, n spécial, ISAU, Kinshasa.

- [17] Loi n° 11/009 du 09 juillet 2014 portant protection de l'environnement.
- [18] Arrêté de l'Hôtel de Ville de Kinshasa N°/SC 088/MINEECG/BLD/PLS/2010 du Mai 2010 portant sur mesures collectives d'assainissement dans la Ville de Kinshasa.
- [19] Loi organique n°08/016 du 7 octobre 2008, portant composition, organisation et fonctionnement des Entités Territoriales Décentralisées et leurs rapports avec l'Etat et les Provinces.