

Public Participation Involvement to Improve the Solid and Liquid Waste Management in Village and Their Surrounding Area in Lideta

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Abstract— Recently there are public participation by Ito5 development army to environmental sanitation. To understand the participation of public on solid and liquid waste management in the sub city level, to identify the severity of problems solid and liquid waste collection, storage and transportation related in other management system one to one relation. To conduct a cross-sectional, descriptive study, a total of 3033 households were selected using a multi-staged random sampling technique and information was obtained from them using an interview-administered questionnaire. Most communicable disease can cause (71%) from mismanagement of solid and liquid waste in collection, storage, transportation and disposing problem, but when the public participation directly or indirectly can solve more than 80% of disease cause problem of solid and liquid waste mismanagement. To solve the problem by developing the awareness creation and practical work of the public participation and to manage solid and liquid waste collecting, handling, transporting and disposing properly to protect health, environment and social livelihood, so what to give attention to be assigned. Most disease can cause due to solid and liquid waste mismanaging problem of different types of disease either acute or chronic. 89% of the sub city caused by improper management of solid and liquid waste.

Keywords— Solid and liquid waste, improper management, sanitation, waste.

I. INTRODUCTION

Public participation is the sociological process by which residents organize themselves and become involved at the level of a living area or a neighborhood, to improve the conditions of daily life for solid and liquid waste proper management or (water, sanitation, health, education, etc.). “A developed country is one that allows all its citizens to enjoy a free and healthy life in a safe environment.” (Nielsen, 2011). “Solid materials as well as some liquids in containers, which are discarded or rejected as being spent, useless, worthless, or in excess.” (Nelson, et al., 2009). Rapid growth of population and industrialization degrades the urban environment and places serious stress on natural resources, which undermines the quality of the immediate surroundings, and degradation of the environment in most cities of the developing world. Municipalities of the developing countries are not able to handle properly the increasing quantities of waste, which results in uncollected waste on roads and in other public places (WHO, 1996). Urbanization is not necessarily a new phenomenon on the continent of Africa, as shown by urban centers like Addis Ababa, Cairo, Kano, and Timbuktu (Onibokun and Kumuyi, 2003). The possibility of waste collection from the slums might be different from the rest of the town. To cope with this variation a combination of collection method are necessary (Henry, et al., 2006). Common waste treatment methods are dumping, landfill, incineration, biological treatment and recycling. (The World Bank, 2012).

The effective use of measures that create and maintain healthy environmental conditions. Among these measures are the safeguarding of food and water, proper solid, sewage and excreta disposal, and the control of disease-carrying insects and animals. Sanitation includes personal hygiene and

environmental sanitation but environmental sanitation is more focused on solid and liquid waste management. Poor waste handling practices and inadequate provision of solid waste management facilities in cities of developing countries. Improper handling, storage and disposal of wastes are major causes of environmental pollution, which provides breeding grounds for pathogenic organisms and encourages the spread of infectious diseases. In addition, an association was found between waste burning and the incidence of respiratory health symptoms among adults and children. Ensuring that waste generated in the home is properly stored and promptly picked up for proper disposal will help in reducing the incidence of infectious diseases in our urban areas. Identifying areas of deficiency and planning strategies at addressing these deficiencies will help achieve sound environmental health. The study was aimed to ascertain the waste handling knowledge, attitude and practices among solid waste management from home and surrounding areas in lideta, with a view to identifying such areas of deficiency and recommending appropriate interventions. Also the sanitation of town is one of the principal criteria to reflect the level of town and the life style of the inhabitant.

The current capacity of most solid and liquid waste management systems in Africa is inadequate and too slow to meet the increasing demand of the solid and liquid waste generated (Bjerkli, 2005).

Solid waste management includes many aspects which are gender related. The waste itself may not differ from a woman and a man, but when it comes to waste management there are several gender specific differences. Women plays a traditionally import role in the household and are often responsible for waste generating activities such as cooking, cleaning etc. The management of the waste inside the

household therefore often fell upon the woman. As a consequence of this women, in many instances, also take more responsibility on a community level when they become aware of the negatively impact of inadequate waste management. (Bernstein, 2004).

Addis Ababa is capital city of Ethiopia as well as house to head of AU and different type of continental and universal organization therefore, it becomes to the destination city to world. At least since four decade among the responsibility of town municipality solid and liquid waste management is take lion share but the complain of customer about solid and liquid waste not enough completely. So there must be strong movment by public participations to be answer the problem of people. The policy and strategies which were established formerly used to sucess temporarily.

There were however several reasons why a different approach was needed for mapping the waste management in developing countries. One of them is the range of the waste collection system. Whereas waste collection in developed countries takes place on an extensive centralized scale, the formal waste collection in developing countries is much more inadequate. (The World Bank, 2012). The importance of the informal sector is another reason why an approach which includes other elements of the waste management than waste auditing is needed (Medina, 2010).

Recently there were public participation by 1to5 development army to environmental sanitation. with this system there are many tangeble improvement on environmntal sanitation but there did not research or documents which indicate the transition of environmental sanitation. This study help to identified the public participation on environmental sanitation and stepping stone for other work.

II. METHODS AND MATERIAL

A. Study Area

Lideta is one of the sub city among ten sub cities of Addis abeba. The boarder subcity are at the north addis ketema, at the south kirkose, at the east arada and at the west kolfe keranyo the area of subcity is 918.27 hectar and the expected number of households and population are 30333 and 199,795 respectively. Located at (9° 0' 59" N) latitude and (38° 44' 1" S) longtiud. 1200m above sea level. The subcity weather condition mainly categorized into four seasons. Those are Hard rain season (**kiremt**) from June to august, (**mekher**) from September to November, dry season (**bega**) from December to February and few rain seasons (**tsedey**) from March to may (from 2007 census of CSA report).

B. Source of Data

Source of data was included primary and secondary data source's used directly the primary data collected by quessionnior, observation for public participation in collection, handling, hauling and cleaning the surrounding areas take photo from the worker of cleansing management office, households and others and for secondary data used different types of studies from internet web, and graduating paper for master program mostly in the literature review part.

C. Selection Criteria

Sampling from 30333 population take 10 percent of it was 3033 household sample from 30333 total household and to take from ten woreda depending on the public size. The selection method of sample was taking from the total out of 10 percent for each woreda for instance, total household of woreda 1 was 3508 the sample size of household is 351(10%) as a woreda, these sample size by using systematic random sampling method. Total number of household of woreda 1 divided to the sample size (3508/351=10) resulted number is ten this number represented the gap interval between two household when I took sample therefore when I took one sample from one household and then jump 10 household after that take the second sample. For samples other than household I selected their sample by using quota and lottery method. I selected the place where sample taken from institution 10% of sample as well as 10% from household that where around the channel and rivers and the remaining from other parts of woreda. To be achieved those followed systematic sampling method.

D. Data Collection

The data which needed to this study was collected from MSWC, households, cleansing management workers and other public centers by preparing quessionnior, additionally observation and photo was used. SEC (educational level, monthly income , occupation) and solid waste picking schedul and others variables what collected there data was by using quessenior as well as cleaning the village , solid waste handling system of households and MSWC , collection and transfer practice of solid waste and other information was collected by observation. During data collection all woreda officers was participated. The officers collected data directly from MSWC, RC and household by asking the question directly but to others they gave the quessionnior to filled by themselves by tolding the aim of the study was used the data of observation during data collection as an additional evidence for the data collected by quessionnior. As well as we used it for discussion part of the study performed data collection by participated 40 MSWC members, 20 RC , 3033 HH (333-10% from institutions) , 10 officers and others.

Table 1: Which shown the sample size of target group and there selection method from different woredas.

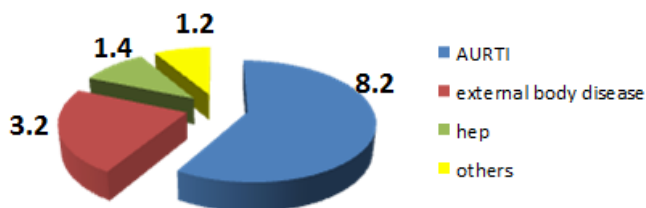
S.No	Wore das	Number of 1 to 5 dev't army (H)	Number of institution (I)	Number of trade house (T)
1	1	702	8	108
2	2	302	11	364
3	3	953	12	400
4	4	1077	19	1000
5	5	717	8	110
6	6	200	3	100
7	7	719	10	84
8	8	869	12	436
9	9	137	7	73
10	10	648	15	390
Total		6324	105	3065

III. RESULT AND DISCUSSION

A. Community

From the total 3333 sample of Households, 3272 of them participated in this study constituting response rate of 98.1 percent. We saw below the respondents answers step by step. What types of disease acquired due to waste generated at residential place? From the total respondent 47.9% said that respiratory tract infection, 14.7 % disease of external bodies and 17.8% said hepatitis the rest respondent gave their response as follow 3.5% I did n't know, 4.2% said diarrhea, 4.2% typhoid similarly 4.4% said cholera, 1.7% said asthmatic disease, 1.2% said most type of communicable disease only 0.7% of them said that every type of disease can caused.

a disease at HH level due to solid waste



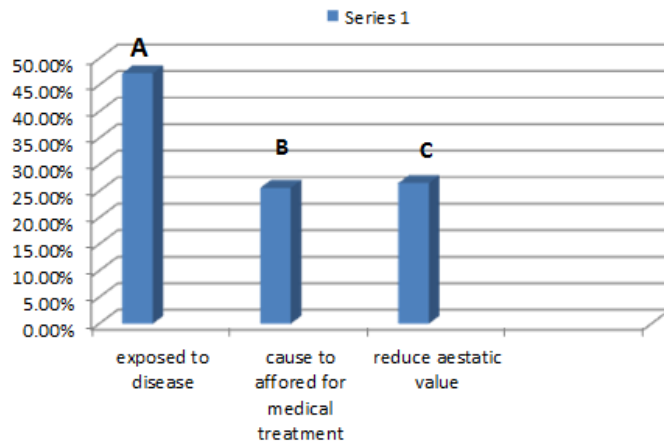
Graph 1:-type of disease which mostly acquired on the community at household level due to solid waste in lideta subcity.

From the graph 1, 19.2% of them said waste which disposed improperly on the villages are cause to decrease the income of commercial centers, 27.9% said it decreased the flow of tourist, 47.2% of them said it reflect the image of society and decrease ascetical value, the others 1% said it has no problem, similarly 1% of them said improperly disposed solid waste was difficult to collect by MSWC especially which disposed in the river, 3.7%. It can cause to nuisance and bad smell. The problem which acquired on stakeholders due to solid and liquid waste is obvious.

Table 2. Which express about the problems due to solid and liquid waste in lideta subcity, at 2008.

S. No.	Problems of solid and liquid waste that reflect on our environment due to lack of proper handling	Frequency	Percent	Remark
1	Exposing to disease	1322	40.4	
2	cause to afford for medical treatment	836	25.6	
3	Reducing the astatic of environment	866	26.5	
4	Others			
	Asthma	27	0.8	
	Bad odor and breeding site to vector and rodent	199	6	
	I did not know	22	0.7	

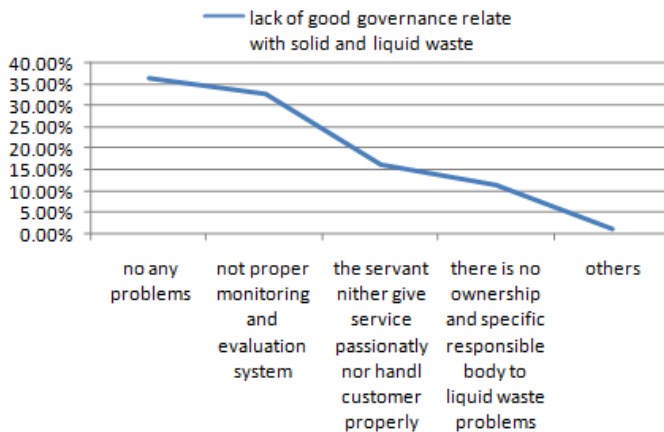
From the below graph 2 Point A show solid and liquid waste can cause to disease also point B show relatedly can cause to extra expense and point C show solid and liquid waste can cause to decrease the beauty of subcity.



Graph 2:-reflection of improper solid and liquid waste management on the environment.

Table 3: Shown problems related with latrine in lideta subcity.

S.No	The identified problems due to latrine	Frequency	Percent	Remark
1	Fell on disease and naissance due to it bad odor	1370	43.7	
2	The pits fill fastly	685	21.85	
3	Lack of utilization	814	25.95	
4	Others			
	Inserting plastic...in to the pit of latrine	114	3.6	
	Our latrine cannot able to suck due to ...	77	2.45	
	We don't have latrine	74	2.36	



Graph 3:- graph which shown the comment of good governance about solid and liquid waste.

What are the problem aquaired on you related with liquid waste? 57.2% of respondent said bad odor 40.7% said acquiring to communicable disease and the rest 2.1% said we didn't acquired to any problems related with liquid waste. How did you dispose liquid waste in your house? 44.2% said we disposed it in the hole around our house traditionally, 35.86% said we disposed it by using prepared place which connect with modern sewerage system, 18.1% said we disposed it in the self prepared private land fill pit and only the rest 1.8% we disposed it in the shared street channel. almost

all part of community in a subcity were vulnerable to a problem related with liquid waste especially to bad odor, communicable disease were common because of as we saw from the answer of HH or from observation there was a gap of proper liquid waste management site. “No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment.” (Pollution Control and Waste Management Bill, third draft, 2003)

What was your comment on the administrative bodies in solid and liquid waste management system (related with good governance)? 15.9 % said they were neither gave service passionately nor handle customer properly, 32.7% of them said the higher level manager not follow and evaluate the work and problem related with solid and liquid waste at ground level, 36.3% said we did not see any problem, 2.9% the problem related with latrine,

Only 0.4% said solid waste not pick by it scheduled, 0.6 said we didn't have any comment, 11.2% said there was no owner specific responsible body to the problem related with liquid waste management system.

B. Participation of Stakeholders

The participation of stakeholders in different issue was obligatory of voluntaries because government cannot able to achieve every activity only by itself especially in developing country therefore different stakeholders can participate by their many, idea, material and other. In lideta subcity the participation of different types of stakeholders on environmental sanitation was the main cause to the progress up to now. But it was not consistent and the people who were active are not evenly distributed in subcity.

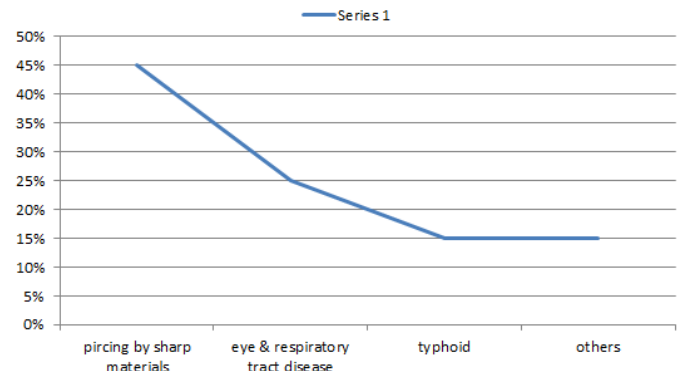
C. Public Participation, on Environmental Sanitation

The public can play a role in promoting efficient, financially sound, technically competent management of waste issues by demanding accountability from the MSWM system. Although in many countries the public has long grown accustomed to having low expectations of government, the pressing and very visible problems brought about by the absence of effective MSWM systems may inspire stronger demands for good performance from public managers and any private Companies with whom they work. Public education is important in achieving the goal of public involvement. In lideta subcity solid waste management system public involvements have a great contribution. Specially to clean their village by using dev't army. “Prevent and reduce health risks associated with exposure to healthcare substances, household, radiation and other waste from healthcare workers, waste handlers and public by promoting sound environmental waste management practices.” Ministry of health and social service, 2010)

D. MSWC

Among the selected sample of MSWC 36.3 % of them responded that we pierced by sharp materials during work, 23.9% said to respiratory tract infection & eye disease as well

as 39.1 % to typhoid. From the below graph 4 and 5 and table 4 and 5 in addition to figure 1 the total respondent 40.9 % of them said we hold (houel) solid waste by our back, but 45.5% said that we are not, the rest 13.6% said only we hold it by our backside during picking from house. 29.4% said we didn't have any comment similarly 29.4% of them said our monthly salary is not arrived timely, as well as the rest 42% said woreda officers and sub city cleansing management office follow and support us properly but the other managerial department never be see toward us and our work.



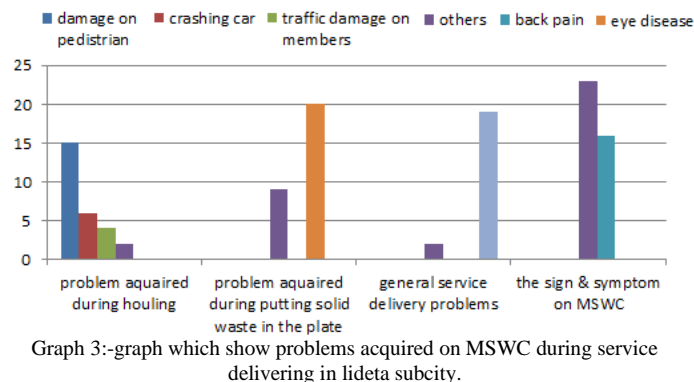
Graph 4:-graph which shown types of disease and injury acquired on MSWC in lideta subcity.

Table 4. Type of problem which acquired on MSWC in lideta subcity.

The problem acquired on MSWC during work	Types of problem	Frequency	Percent
Sign and symptoms on MSWC related with their work	Back pain complain	16	41
	Skin skreching	11	28.2
	Headache	12	30.8
Problems during solid waste houling	Crashing of members by car	6	20.7
	Felling of members	15	51.7
	Crashing of pedestrian by our cart	3	10.3
	Crashing of car by our cart	1	3.4
	Our cart frequently	3	10.3
General problem during service delivering	Demoralization, blaming etc	19	79.2
	Affording from saving due to crashing of car or pedestrian	5	20.8
The problem during solid waste putting in the plate	Solid waste aerosols enter to in our eye	20	51.3
	Liquid waste (leachate) enter to in our eye	10	25.6
	We fell on the land	9	23.1



Figure 1:- Shown the usual practice of MSWE in lideta subcity.



E. Health Extension Workers/HEWs/

What was the sanitation status of your woreda? 3(23%) of HEWs said It was neither good nor bad in order to the life style of the community which is densed, 1(7.7%) said relatively it was good especially related with solid waste management, 7(53.8%) said there was a good progress rather than the past years and the rest 2(15.4%) said it is not even sanitation status in the woredas some part was good but some was not more than 50 % of subcity HEW comment that now day there is a progress on sanitation of subcity rather than past year but all of them believed that there was a gap of managing solid and liquid waste especially on liquid waste managing system. What types of problems can acquire due to improper managements of solid and liquid waste? 7 (77.8%) of HEW said astatic value of the environment was decrease, comfortable breading site to vector and rodent, AURTI etc, 1(11.1%) said AWD,diarria and pneumonia similarly 1(11.1%) said typhoid and typhus. Expressed the economical, social, political and developmental impact of solid and liquid waste problems and the solution? All of them (100%) said improper liquid waste management system or absence of proper liquid waste management and problem related with latrin was the main samples which show lack of good governance because when the communities complain about the problems the managerial group not gave to them a proper and enough answer therefore; the town administrative must be facilitated and construct modern drainage system

F. Health Institution/HC/

From the total subcity health institution the sample had taken 3 HC which included or gave service to large amounts of community groups. Recent 10 top diseases in adult and under five patients which were cause of morbidity in the subcity area.

From the below table the three topest disease which were mainly caused by solid and liquid waste therefore, this was a great sign to the main cause of morbidity in the subcity sourced from improper management of solid and liquid waste with the aggravation of bad personal hyiegen habit more than half (61%) disease caused in subcity due to lack of proper solid and liquid waste management and different study shown that almost 85% communicable disease can cause by lack of proper management of solid and liquid waste. Therefore, the study resulted in a subcity slightly similar with global proven fact.

Table 5:-Table which show ten top cause of morbidity in lideta subcity health institutes.

S.No	Types of disease	Frequency	Percent	Remark
1	AURTI	6638	26.7	
2	Thypoid and thypus	3910	15.8	
3	Diarrheal disease	2696	10.9	
4	UTI	1982	7.9	
5	Trauma	1758	7	
6	Dyspepsia	1255	5	
7	Infection of skin and sub cutaneous tissue	1096	4.4	
8	Hypertension	1017	4	
9	Pneumonia	913	3.7	
10	Disease of eye	723	2.9	
11	Others	2913	11.7	
Total		24901	100	

From the sample HC1(33.3%) said we gave the decomposable and reuse waste to woredas solid waste enterprise and burnt the hazardous (infectious) waste in the incinerator and the rest 2(66.7%) said burnt all types of waste in the incinators. relatedly when they expressed about their liquid waste disposal system one HC (33.3%) said we have a septic tank and the 2 HC said we have drainage system. All HC (100%) expressed professionally the impact of solid and liquid waste on the community can be cause to Respiratory truck infection, to communicable diseases as well as psychological impact (related with a static values)

G. Others Sectors

Trade and Industries Office:-types of trade was common in your woredas 3 office (37.5%) said kiosk shope and 5 (62.5%) said cars pare part and 2(33.3%) of office considered the solid and liquid waste management system of customer during licensing for trad and the rest 4(66.7%) was not because one office (25%) said our customer came to us and ask only to repair his/her license, similarly another woreda office (25%) said there was an office which considered these criteria and the rest 2 office (50%) said it is not necessary to considered liquid and waste management system to the license of shops may be to food establishment house. The type of place which more trade was presented was non densed and cleaned area 2 (66.7%) and 1 (33.3%) said the place where in front of the main road and all office gave there comment about impact of solid and liquid waste on the trade sectors especially lack of sanitation on hotels, food establishment etc

H. Culture and Tourism Office

This office was new at woreda level but sample collected the sample data from woredas which have this office during study the sample office gave there comments related with solid and liquid waste as a exaggerated comment in related with solid and liquid waste. General the attractiveness of subcity decrease as well as the area where were book store, hotels and parks are mostly visited by local and foreign tourists therefore the negative impact of solid and liquid waste on woredas they can cause to decrease the flow of tourist also the tourists who visited the place in subcity not gave a selective due to the waste management was poor.

I. Findings

The findings of this study about social, economical, political, environmental and other activities physical observation and practical work in Addis Ababa Ethiopian but now to work to minimize those problem what we saw below in photo.



Figure 2:-Social problem of solid waste management without public participation.



Figure 3:-Poor solid waste management in market area it was economical, political and other effect of the country



Figure 4:-Poor public participation was wastage of solid waste managing material.

From the figure 2 to 7 the problem of solid waste management without public participation had social, political, Environmental and Economical side effect and other impact of the human health and the whole nature of the surrounding areas.



Figure 5:-poor solid waste management did go burning of solid waste problem of Environmental pollution



Figure 6:-Poor solid waste management disposal any place pollution of Environment



Figure 7:-Poor solid waste disposal area was unsecured and bad for Environment, Social and Health of the public

Most communicable disease (71%) can cause due to solid and liquid mismanagements .the stakeholders directly or indirectly can fell on extra expense related with solid and liquid waste management. in who study the cause of disease coming from solid and liquid waste more than 80%. More than 70% of disease in subcity caused by improper collection, handling, transporting and disposing solid and liquid waste, the topest disease which acquired on community, RC, MSWC, officers due to mismanagement of solid and liquid waste is AURTI

IV. CONCLUSION

Only 3.5% of community haven't a knowledge about the negative impact of solid and liquid waste also 0.7% of them think that all type of disease can cause due to solid and liquid waste almost 96% know there impact more than 90% of community fell on the problems related with latrin (bad odor, different types of disease, pit fill fastly, lack of utilization etc...). One third of community comment that there is no problems related with solid and liquid waste on management group similarly 1/3 of community said there is a problem on

worker these are not give service properly more than 1/3 of MSWC priced by sharp material during work without proper care. 30.8% of them adapt headache, 20.8% of them fell on extra expense to car accident on them during they are on work. Similarly RC acquired different types of problem, 8% of them complain about protective material which are not fulfill timely similarly 8% of them said we haven't shiny close which help to protect us from traffic accident. Almost all cleansing management office officers are susceptible to different types of disease either acute or chronic.89% of them said improper management of solid and liquid waste can cause to decreasing the image of subcity. More than 50% of HEWs comment that now day there was progress on sanitation of subcity rather than past year.66.7% of trade and industries office said the type of place which were non dense and clean are more trade was presented. In lideta subcity most community (tourist) visit park, book store, hotels but there is no negative comment related with solid and liquid management in that area. And what we were concluding that to show how solid and liquid waste improving their collection, handling, transporting and disposing activities in right way what we were thinking nicely tomorrow and now.

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REFERENCE

- [1] Ayenew, Mehret (1999): The city of Addis Ababa: Policy options for the governance and management of a city with multiple identity, in: FSS Discussion Paper No. 2, FORUM for SOCIAL STUDIES, Addis Ababa: Addis Ababa University.
- [2] Bernstein, J., 2004. Social Assessment and public participation in municipal solid waste management, s.l.: Urban Environment Thematic Group.
- [3] Bjerkli, C. L. (2005). The cycle of plastic waste: an analysis on the informal plastic recovery system: Addis Ababa, Ethiopia.
- [4] Henry, R. K., Yongsheng, Z. & Jun, D., 2006. Municipal solid waste management challenges in developing countries- Kenyan case study. Waste Management, Issue 26, pp. 92-100.
- [5] Medina, M., 2010. Solid Wastes, Poverty and the Environment in Developing Country Citires, s.l.: UNU-WIDER.
- [6] Ministry of health and social service, 2010. National waste management plan. Windhoek: s.n.
- [7] Nielsen, L., 2011. IMF Working paper; Classification of Countries Based on their Level of Development, s.l.: s.n.
- [8] Onibokun AG, Kumuyi AJ (2003). International Development Research Centre: Science for Humanity. Ch 3. Ibadan, Nigeria.
- [9] Pollution Control and Waste Management Bill, third draft, 2003. s.l.:s.n.
- [10] The World Bank, 2012. What a Waste - a global review of solid waste management, Washington: s.n.
- [11] World Health Organization (WHO), 1996. Guides for municipal solid waste management in Pacific island countries, Healthy cities - healthy islands, Document series, no. 6.