

## THE ADVANTAGE OF TRANSFERRING SOLID WASTE MANAGEMENT SYSTEM FROM LIFTING TRUCK (PLATE) TO COMPACTOR TRUCK

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### ABSTRACT

Comparison of former solid waste management system with compactor truck also there directs or indirect influence on stakeholder is my main cause to conduct this study and to use different type of sampling methods because of for the variation of stakeholders (target group) even though the sample took 800 HH sample by the selection method of using systematic random sampling as well as different sampling size to different target group and the study design of descriptive cross sectional method. 96.4% of HH said transferring from lifting truck to compacter is proper. Also they comment about it by comparison with plate 25.5% of them said plate was not modern and compacter is modern as well as after compacter truck system solid waste is pick timely this is also best to prevent their health. 50% and 56.7% head and officers respectively said plate (lifting truck) was not modern and fast system but compacter tuck is modern and fast. 63.3%, 20% and 40% officers, heads and drivers said by the recent solid waste management system MSWE were not beneficiary but by compacter truck they are beneficiary in order to increase their income and saving. 60% of driver said that it is difficult to get spare part and trained mechanics to compacter truck rather than lifting truck. 84.4% of MSWC said compacter truck is cause to increase our income and saving rather than plate. 55.5% of them said that it increased by double from the former time. 88.9% of them said compacter truck have a relationship with our health due to their contact time with solid waste. Even if there is not an obvious drawback on compacter truck it is not available to take dead animal therefore, subcity reserve an additional option or another type of vehicle which is available to take dead animal and subcity try to get and store stock for spare part and trainer mechanics who have enough knowledge about compacter truck

**KEYWORDS:** Compactors, Transport, Vehicle, Mechanics, Trucks

### INTRODUCTION

At present, management practices of waste are fluctuating for residential and industrial manufactures, rural and urban areas, and developing and developed countries. The price of providing appropriate management of solid waste in under developed countries is remarkably high (Hazra *et al.*, 2013). Unplanned and improper waste handling and disposal practices lead to increments in the solid waste management costs. Imperfect method of collection due to which the price of collecting solid waste is very high. In this way, 16% to 76% of the collection rate of solid waste is mostly restricted to high discernibility areas in Addis Ababa, Ethiopia, where people are willing to pay for the better collection of solid waste (Aremu, 2013). It is generally assumed that public is not supposed to be responsible for solid waste management and it is the administrative authorities and local experts that are solely responsible for managing solid waste and disposal with efficacy (Vidanaarachchi *et al.*, 2006; Abdoli *et al.*, 2016). Decision making of residential households in terms of solid waste management and disposal facility is affected by various elements (Noori *et al.*, 2010; Monavari *et al.*, 2011). Waste

disposal choice is greatly influenced by type and nature of waste management services. As compared to the usage of communal containers, insufficient provision of waste containers to the public and transportation issues leads to the improper disposal of waste in streets, on roads or in empty plots (Guerrero *et al.*, 2013). In addition to this, there is a lack of proper methods and facilities for dumping of waste in well prepared & engineered landfills due to the inadequate financial support which is another limiting factor in safe disposal of waste (Awunyo Vitor *et al.*, 2013) which is associated with further deterioration of waste management issues at a global scale. Therefore, there is a need for development of applicable and efficient waste management strategies that consider all the aspects and elements of solid waste management and disposal which in turn will help in lessening the global burden of waste related issues. Various types of efficient and safe waste management facilities and services can be provided by both government and private firms (Alavi Moghadam *et al.*, 2009). According to an inline study done in 2006, despite a significant amount of money spent by municipal authority in developing countries for waste management in residential areas, the management practices were still not efficient (Henry *et al.*, 2006). The existing waste management condition and survey results showed that there is a room for improvement with respect to storage and collection services provided by the local public authority which was availed by the majority of the households in the area

Many developing countries use 20%-50% budget of town to managed there city solid waste but only 40%-70% of city solid waste is collected. Also by this service only 50% of city community beneficiary. Sometimes 80% of their vehicles which help to collect and transport solid waste can be misused and need repairment. American solid waste hauling practice is collecting solid waste from the block by small truck and then it transfer to temporary station here the collected municipal solid waste is unloaded from collection trucks, compacted to reduce the volume of the waste and held for a short time before it is reloaded on to larger, long-distance truck or containers for shipment to landfill or other treatment and disposal facilities. Most town of our country collection of their solid waste is the primary responsibility of municipality. Also before 2001 E.C addis abeba solid waste management system was same with other town of country, although after 2001 cleansing management agency was established as a responsible body to waste management system in addis abeba as well as agency distribute vehicles to subcity and take solid waste from woreda level. Now day our city addis abeba transfer from lifting truck/plate/ to compacter truck to manage solid waste so agency distributed about 2-3 compacter truck to each subcity. Lideta subcity is the primary subcity to beggene work by compacter truck. Even if, there is different types of solid waste management system it can vary from place to place, country to country, time to time by it system quality. In lideta subcity formerly solid waste had been loaded by assister in covered vehicle and hauled to reppi which was difficult to assister it was traditional because they was take the responsibility of loading solid waste at woreda and unloading to reppi by their hand and then secondly the transition period between ordinary covered truck and compacter system was lifting truck(plate) system managed solid waste by MSWE fill solid waste in the plate container a lifting truck lift the plate and hauled to reppi during this time solid waste was seen to the public but now day MSWE put solid waste directly in the compacter truck it volume is about 100m<sup>3</sup> by compacting solid waste. Therefore, this research identified the progress (advantage) to stakeholders system transferring from lifting truck to compacter truck

## **METHODS AND MATERIALS**

### **Study Area**

Lideta is one of the subcities among ten subcity 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 33336 and 283795 respectively. Located at (9° 0' 59" N) latitude and (38° 44' 1" S) longtiud.1200m above sea level. The subcity weather condition mainly categorized in to four seasons, hard rain season (**kiremt**) from June to august, (**mekher**) from September to November, dry season (**bega**) from December to February and few rain season (**tsedey**) from March to may (from 2007 census of CSA report)

**Source of Data**

My source of data was included primary and secondary data source and used directly the primary data collected by quessionnior, observation during collection, handling, hauling and photo from the worker of cleansing management office, households and others and for secondary data and used different types of PDF studies from internet web, and graduating paper for master program, different types of documents mostly in the literature review part.

**Study Method**

**Selection Criteria**

800 household samples from 33336 total household which means 80 from each woredas. The distributed sample size expressed on the above table. Followed sample selection method for woreda level seen as below:-From Total household of woreda the sample size of household is 80 as a woreda we selected these sample size by using systematic random sampling method take the sample evenly from every blocks of woredas and selected the place where sample taken from institution 10%, as well as 90% from household.

**Table 1: Which Show the Sample Size of Target Group and There Selection Method**

S. No	Target Group	Sample Size	Sample Classification to Each Woreda	
1	MSWC	90	30(for each union)	
2	HH	800	80 from each	
3	Other sector head	30	Three from each	
4	Worke rs under subcity cleansi ng manag ement	Hea ds	10	All
		Offi cers	30	Three from each
		Driv ers	5	All
		Assi ster	15	50%
<b>Total</b>		<b>980</b>		

**RESULT AND DISCUSSIONS**

**Households**

See the quesnnior from annex 220 (27.5%) respondent said that we have a knowledge of how is managed solid waste in our woreda and 580(72.5%) said we are not. Among who said we know how to managed 25(11.4%) said solid waste put in plate and load by lifting truck and 195(88.6%) of them said by compactor truck 188(96.4%) respondent said the transition from lifting truck to compactor truck is proper and 7(3.6%) of them said we don't have knowledge. There is

much advantage of compactor truck rather than lifting but there are a complaint from some driver which is compactor truck is difficult to repair due to lack of mechanics and spare part which have an influence on MSWE. If one compactor is misused waste of much enterprise delayed but during lifting truck May one enterprise waste delayed. 180(95.2%) respondent said that compactor truck have an influence on solid waste management system and on MSWE and the rest 9(4.8%) said we don't know. There answer related with compactor truck is can expressed according to work quality, income and health which are most MSWE they can stay few time on work.

#### **Cleansing Management Worker (Driver, Assister, Officer and Head)**

Every cleansing management worker said compactor truck is definitely better than lifting truck system. They express their reason by comparison. According to the answer of worker 10(100%), 28(93.3%), 5(100%) and 13(86.7%) head, officers, driver and assister respectively said that Transferring of solid waste management System from lifting truck (plate) to compacter

Truck has direct or indirect influence on our work the rest said it hasn't an influence. The worker expresses an influence of compacter track on their work as follow

#### **Other Sectors Heads**

From asked 30 other sectors head 27(90%) of them said that we are know how is managed solid waste in our working woreda only 3(10%) of them responded that the recent plate system. Relatedly all of them who said yes we know the system said that it is better than the recent system also they express below by comparison

**Table 2: Table Which Show the Influence of Compacter Truck on the Job of Worker of Cleansing -\*Management Worker in Lideta Subcity**

S. No	Stakeholders	An Idea	Number	Percent
1	Officers	Compactor truck is one way and cause to help to keep the cleanness of zone	15	50
		It was comfortable to officers to follow MSWE	5	16.7
2	Head	It is cause to increase income gathering from waste	8	80
		It can cause to increase the cleanness of zone	5	50

**Table 3: The Idea of Other Sector Head about Compacter Truck with a Comparison of Lifting Truck**

S. No	An Idea	Number	Percent
1	Compacter truck is modern than plate/lifting truck	16	59.3
2	transfer station is cleaner than recent time	8	29.6
3	MSWE complete their work earlier	6	22.2
4	solid waste not postponed for next day	14	51.8

**MSWE**

From the MSWE members sample 45(50%) said that compacter truck is cause to save our energy and 7(84.4 %?) of them said cause to increase our income and deposit also 34(37.7%) of them said it can cause to collect a lot of waste and clean zone. What did the community comment to you after compacter truck is lunched? 30(33.3%) said the HH said to us you come quickly to pick solid waste and 30(33.3%) said they didn't said anything's are there any progress on your income and deposit in order to lunch compacter truck? All of them said yes it have relatedly so 50 (55.5%) said that it increase by double from recent time, 20 (22.2%) said increase by more than double similarly 20(22.2%) of them said that it is better but not increase by double are compacter truck work having a relationship with your health? 80 (88.9%) of them said yes it have relationship but 10 (11.1%) of them said not. From who said yes it have relationship 50(62.5%) of them said solid waste not fell or enter in our eye rather than plate, it cause to keep our health and 30 (37.5%) of them said we stayed a few time on work so it is better to our health.

**Table 4: A Table Which Show Different Idea about Lifting and Compacter Truck by Comparison in Lideta Subcity**

Plate Comparison Idea	Plate		Compacter Comparison Idea	Compacter	
	No	%		No	%
Solid waste may not taken timely	88	17.8	Solid waste taken timely	88	17.8
it was bad to beautification for place where around plate	101	20.4	It is better to beautification of place	101	20.4
the waste was seen during transportation	59	11.9	the waste is not seen during transportation	59	11.9
it had been bad odor	96	19.5	there is no bad odor	96	19.5

it was not modern	12 6	25. 5	it is modern	126	25.5
it taken plate of only one enterprise	24	4.9	it take many enterprise solid waste together	24	4.9

**Table 6: A Table Show the Advantage of Compacter Truck with Lifting Track in Lideta Subcity**

S. No	Stakeholders	Plate			Compacter		
		Comparison Idea	No	%	Comparison Idea	No	%
1	Officers	It had been bad odor	15	30	No bad odor	15	30
		It was not fast and modern system	17	56.7	It is fast and modern	17	56.7
		Dead animal can be managed	3	10	Dead animal not managed	3	10
		It was boarding to MSWE	8	26.7	MSWE more initiated	8	26.7
		Income and saving of MSWE was less	19	63.3	Income and saving of MSWE is good	19	63.3
2	Head	It was not fast and modern system	5	50	It is fast and modern	5	50
		Truck taken only one MSWE plate	3	10	It can take many MSWE waste together	3	
		High cost of fuel for with in many repetition loading	4	13.3	Better	4-	13.3
		Income and saving of MSWE was less	6	20	Income and saving of MSWE is good	6	20
3	Driver	It take much fuel for many lifting truck	3	60	Better	3	60
		There was many driver	3	60	It decrease the number of driver	3	60
		The MSWE not beneficiary	2	40	MSWE are beneficiary	2	40
		Better than compacter to get spare part and mechanics	3	60	Difficult to get spare part and trained mechanics	3	60

4	Assister	It take much fuel for many lifting truck	8	53.3	Better	8	53.3
		it Was modern system	9	60	Not modern	9	60
		It have work load on assister	5	33.3	It haven't work load on assister	5	33.3

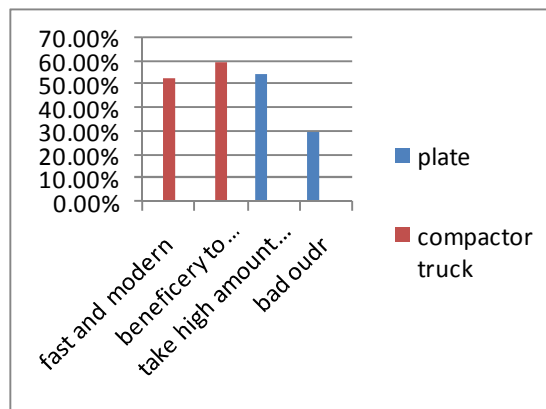


Figure 1: The Comparison of Compactor Truck with Plate by Cleansing Management Worker

### Findings

- 96.4% of HH support the transition of solid waste management from plate to compactor truck as well as every worker of cleansing management office support the new system.
- The income and saving of 84.4% MSWC of subcity is increased after compactor truck is lunched rather than plate. The income and saving of 55.5% MSWC increase by double from the former time.
- compactor truck system save the budget of fuel rather than lifting truck

### CONCLUSIONS

96.4% of HH said transferring from lifting truck to compactor is proper. Also they comment about it by comparison with plate 25.5% of them said plate was not modern and compactor is modern and 19.5% of them said plate had been a bad odor but compactor is not. Every cleansing management worker said compactor truck is definitely better than lifting truck system.50% and 56.7% head and officers respectively said plate (lifting truck) was not modern and fast system but compactor tuck is modern and fast. although 10% of officers said about the drawback of compactor truck it is not take dead animals.63.3%, 20% and 40% officers, heads and drivers said by the recent solid waste management system MSWE were not beneficiary but by compactor truck they are beneficiary in order to increase their income and saving.60% of driver and 53.3% assister said plate was take much fuel for many vehicles but compactor truck minimize it. 60% of driver said that it is difficult to get spare part and trained mechanics to compactor truck rather than lifting truck.84.4% of MSWC said compactor truck is cause to increase our income and saving rather than plate.55.5% of them said that it

increased by double from the former time.88.9% of them said compacter truck have a relationship with our health

## ACKNOWLEDGMENTS

I would like to thanks ten woredas cleancing management officers especially from subcity cleancing management office.

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