

# Urban Environment and Squatting: One Affecting the Other The Case of Burayu Town, Ethiopia

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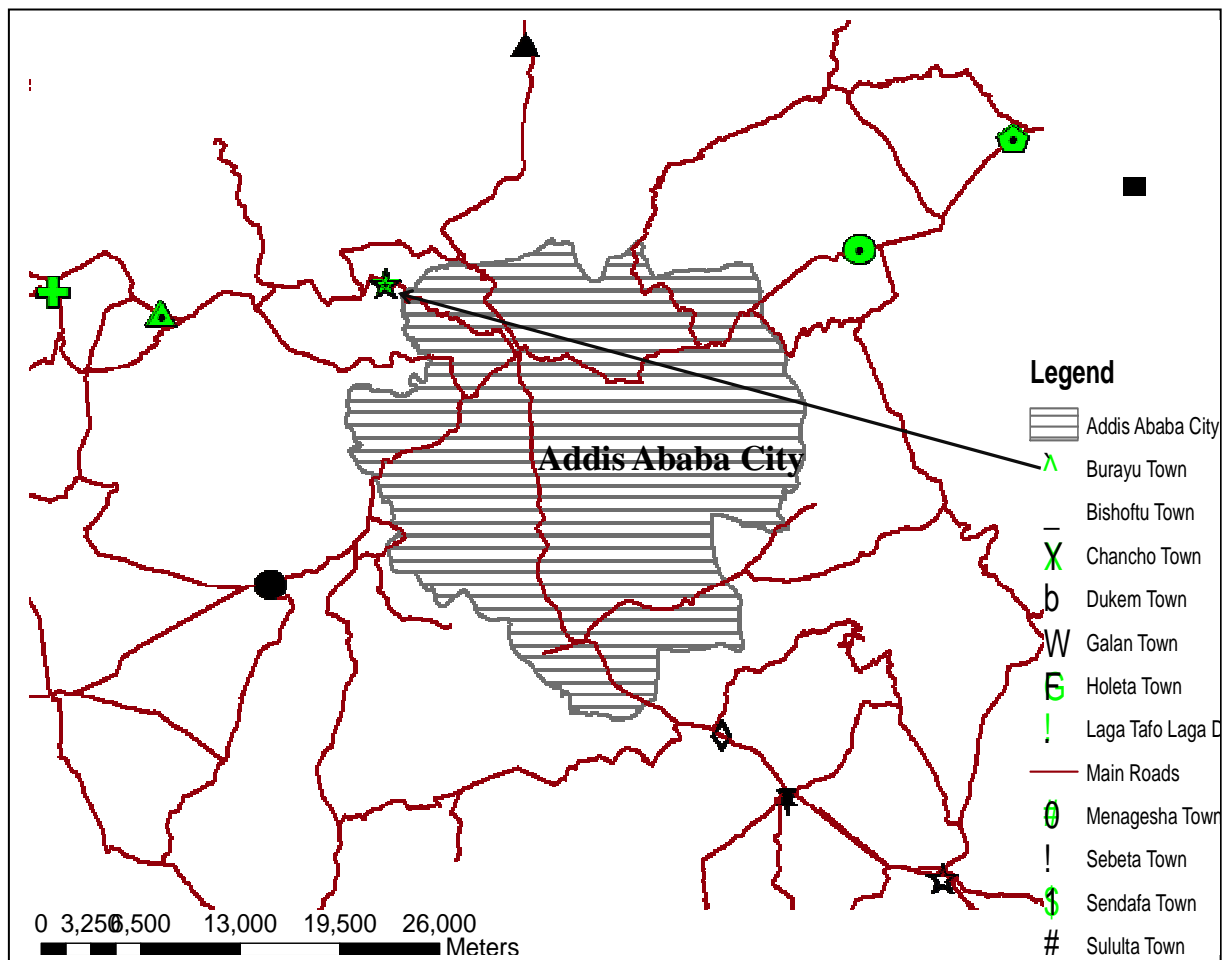
## Abstract:

Squatting is the process of illegally occupying land or buildings without the explicit permission of the owner. It is clear that squatter settlements help some households in solving their shelter problems. But, rising evidences on the other side indicate that squatter settlements are the causes for remarkable public costs many of which are related to environmental degradation. Burayu town is one of the fastest growing towns in Oromia National Regional State of Ethiopia. The town is located about 15 kilometers from the center of Addis Ababa metropolis, the capital of Ethiopia. The population of Burayu town was 4,138 in 1984; 10,027 in 1994; 63,873 in 2007 (Census) and has grown to more than 150,000 in 2013 (estimated), showing that the population of the town has increased very rapidly especially during the past about seven years. The town is characterized by many environmental related problems like proliferation of squatter settlements, expansion of slums and other illegal land developments. The objective of this article is therefore to identify the collision of squatting on urban environment in relation to location of the squatter houses and generation and mismanagement of different kinds of wastes. By random purposive sampling method, 246 squatter households were selected and quantitative data and qualitative information were collected from primary as well as secondary sources and analyzed. The result points out that, squatter houses are negatively related to the town's environment. 58.1 per cent of the squatter houses are located in environmentally sensitive areas which are prohibited by the Structure Plan Preparation Manual prepared by Ethiopian Ministry of Urban Development and Construction, 2012. They generate different kinds of wastes and the management of wastes in squatter settlements is not sustainable.

**Key Words:** Squatting and squatter houses

## 1. Introduction:

Ethiopia remains one of the least urbanized countries in the world. Using the Ethiopian Central Statistical Agency's definition of urban, which includes urban centers as small as 2,000 in population and according to Population and Housing Census of the respective years, urbanization level of Ethiopia was 11.4 per cent in 1984, 13.7 per cent in 1994 and increased to 16.2 per cent in 2007 and the annual urban population growth rate of the country was estimated to be above 4.3 per cent. Ministry of Urban Development and Construction of Ethiopia (2011) acknowledged that more than 40 per cent of urban population of Ethiopia survives below poverty line which is characterized by problems related to substandard housing including slum and squatter settlements, inappropriate living environment, poor development of infrastructure and services, etc. Ethiopia has nine national regional states and two city administrations. Oromia National Regional State is one of the nine national regional states in Ethiopia and Oromia Special Zone Surrounding Finfine is one of the 18 zones of Oromia National Regional State. The Zone is located in the central part of Oromia National Regional State and the administrative center of the zone is located in Addis Ababa city, capital city of Ethiopia. Urbanization level of Oromia Special Zone Surrounding Finfine was 28.8 per cent in 2007 (Central Statistical Agency of Ethiopia, 2007). It is higher than the urbanization levels of Oromia National Regional State and that of Ethiopia which are 13 per cent and 16.2 per cent respectively. There are nine municipal town administrations in the zone (Burayu, Dukem, Gelan, Holeta, Lega Tafo-Lega Dadi, Sebeta, Sululta, Sendafa Bake and Menagesha) and eleven other smaller towns (Oromia National Regional State, Bureau of Finance and Economic Development, 2010). According to the rank given by Oromia National Regional State to all urban centers of the region, Burayu town is one of the first grade town in the region. Relative to other urban centers in the zone, Burayu town is very proximate to Addis Ababa. It is located about 15 KM from the Office of Addis Ababa City government (located in Piyassa) towards the North West on the way to Ambo immediately outside the city limits of Addis Ababa city (Fig 1).



**Fig 1 Location of Burayu Town in Relation to Addis Ababa City and Other Towns**

*Source: Based on Maps from Oromia National Regional State, Bureau of Finance and Economic Development, 2012*

The 2012 revised version of Structure Plan Preparation Manual prepared by Ministry of Urban Development and Construction of Ethiopia gave great attention for urban environment. Specifically, with regard to housing, it prohibits uses of land for housing around environmentally sensitive areas like river side, gorges, waste treatment plants, landfill sites, hilly areas, and on land reserved for forest areas, open spaces, play grounds, recreation centers, etc. Illegal land developers usually do not consider this and particularly, squatters usually squat on vacant areas usually reserved for other purpose in relation to environment. The objective of this article is therefore to identify the collision of squatting on urban environment in relation to location of the squatter houses and generation and mismanagement of different kinds of wastes. By random purposive sampling method, 246 squatter households were selected from different social segments and primary data was collected by questionnaire, interview, and surveying using global positioning system. The secondary data was taken from published or unpublished records of the town administration.

## **2. Location and Compatibility of Squatter Houses in Burayu Town**

Different studies indicate that, people want to construct squatter houses/illegal houses on and around environmentally sensitive areas which are not usually occupied by anyone else. These environmentally sensitive areas usually include high tension electric lines, river sides, industrial areas, solid waste disposal site, flood and hilly areas, near water reservoirs, areas prone to landslides and flooding, protected forests and other susceptible areas. Burayu town also has most of these and other environmentally sensitive areas. As can be seen on table 1 below, 36.2 per cent of the sample squatter houses are located in the buffer areas of river, 16.7 per cent of the sample squatter houses are located in the buffer areas of high tension electric line and 21.5 per cent are located

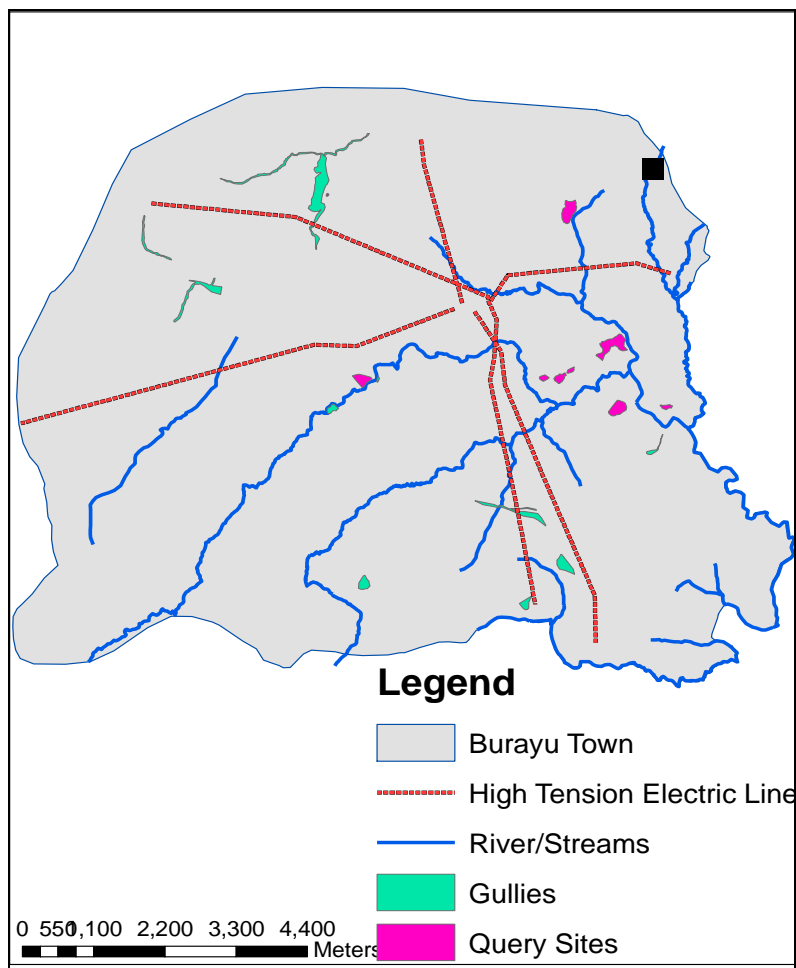
around different solid waste disposal sites. The squatter houses which are located in different industrial zones of the town, adjacent or around hilly and flood areas are 12.2 per cent, 9.8 per cent and 14.6 per cent respectively.

**Table 1 Location of Sample Squatter Houses in Neighborhoods of Environmentally Sensitive Areas in Burayu Town, 2014**

Sample Squatter Houses in the Neighborhood of:	Sample Heads of Squatter Houses Affected	
	Number	Per cent
<b>Sensitive Areas</b>		
River	89	36.2
High Tension Electric Line	41	16.7
Industry	30	12.2
Hilly Areas	24	9.8
Solid Waste Disposal Site	53	21.5
Flood Areas	36	14.6
Other Sensitive Areas	52	21.1
<b>Total Squatter Houses in Sensitive Areas</b>	<b>143</b>	<b>58.1</b>
<b>Total Squatter Houses in Non sensitive Areas</b>	<b>103</b>	<b>41.9</b>
<b>Total Sample Squatter Houses</b>	<b>246</b>	<b>100</b>

*Source: Based on Survey Conducted by the author in 2014*

The next map shows high tension electric line, rivers, streams, quarry sites and gullies in the town. Some of the sample squatter houses are located in the neighborhood of these sensitive areas.



**Figure 2 Geographically Sensitive Areas in Burayu Town**

*Source: Based on Maps from Oromia National Regional State, Oromia Urban Planning Institute, 2014*

Moreover, 21.1 per cent of the sample squatter houses are located in neighborhoods of other sensitive areas which are not compatible for residential purpose and disturb the environment. As seen in table 1 above, from the total sample 246 squatter houses, 58.1 per cent of squatter houses have sensitive areas in their neighborhood. These imply that most squatter households are not respecting the existing standards, guidelines manuals and regulations which are in favor of urban environment. This can be seen as a double edged weapon which harms the squatter households on one side and the urban environment on the other.



**Figure 3 Squatter Houses around High Tension Electric Line in Burayu Town**

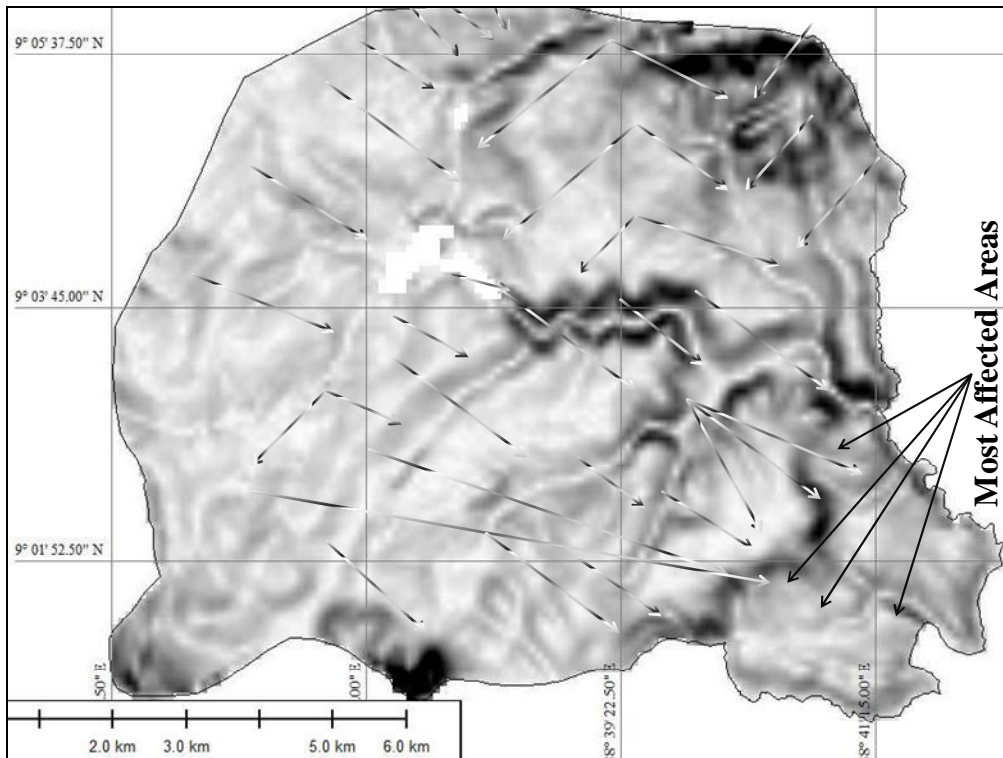
*Source: Photographs Taken by the author, 2014*



**Figure 4 Some Squatter Houses Located in Sensitive Areas in Burayu Town**

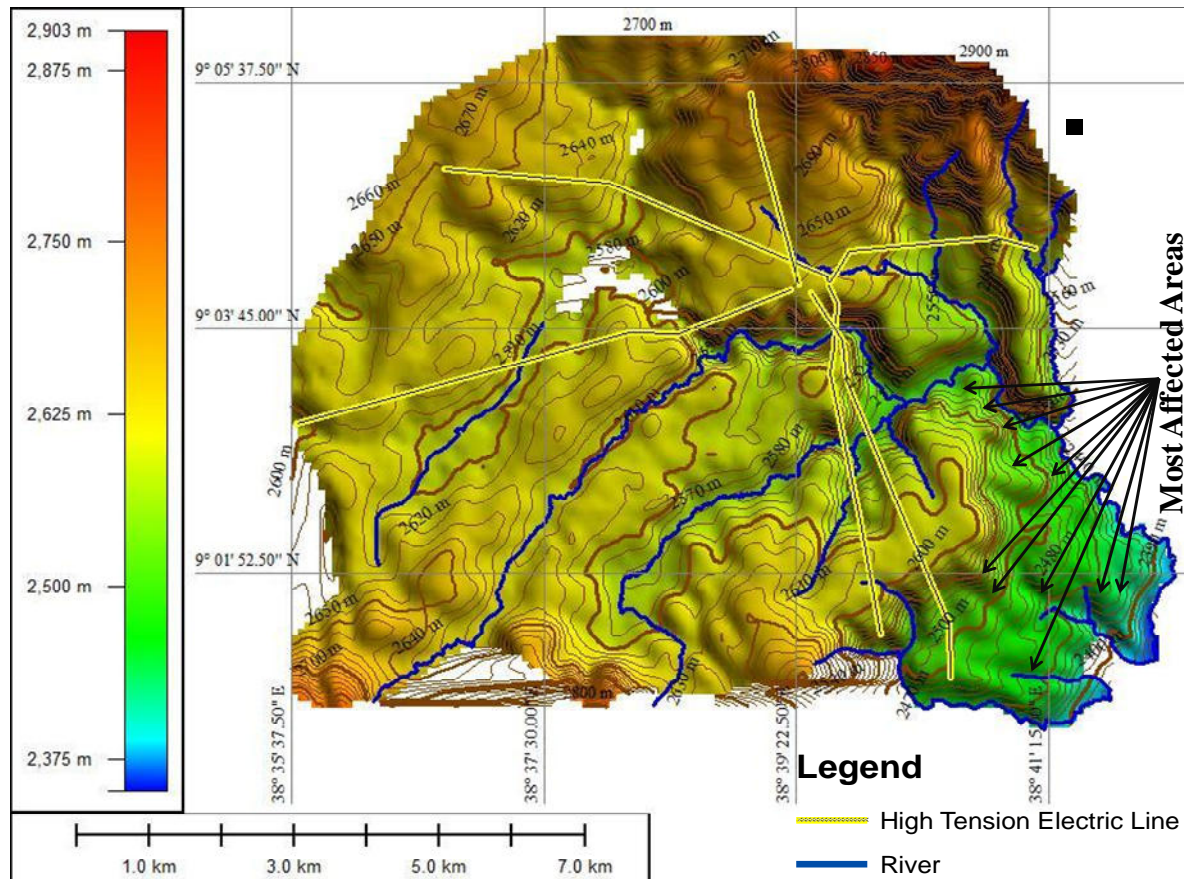
*Source: Photographs Taken by the author, 2014*

Flow direction within the town is towards the South Eastern. This means that the prevailing direction to which the landscape drains is towards the South Eastern direction and as the analysis done indicate, 14.6 % of the sample squatter houses may be affected by this seasonal drain.



**Figure 5 Flow Directions and Accumulation in Burayu Town**  
*Based on Raw Data from Oromia Urban Planning Institute, 2014*

In line with flow direction and accumulation in Burayu town, elevation of Burayu town ranges from 2,375 meters above sea level on the Southern edge of the town to 2,903 meters above sea level around the north eastern fringe of the town. Most of these squatter houses of heads of sample squatter households are constructed on relatively highest and lowest elevation as indicated on figure 6 below. According to the land use, these are planned for forest and green areas.



**Figure 6 Elevation of Burayu Town**

*Source: Based on Raw Data from Oromia Urban Planning Institute, 2014*

Characteristics of the squatter houses in terms of arrangement of squatter houses in the neighborhoods of squatter settlements, arrangement and physical order of squatter houses and on the compatibility of site in which the squatter houses are located were also assessed and the result of the survey is presented on table 2 below.

**Table 2 Opinion of Heads of Sample Squatter Households on the Squatter Houses in Burayu Town**

Condition of Squatter Houses	Heads of Sample Squatter Households Reported										Total	
	Quite Bad		Bad		Neutral		Good		Quite Good			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Residential Layout</b>	25	10.2	160	65.1	2	0.8	53	21.5	6	2.4	<b>246</b>	<b>100</b>
<b>Physical Order of Squatter Houses</b>	20	8.2	189	76.8	3	1.2	31	12.6	3	1.2	<b>246</b>	<b>100</b>
<b>Sites of Squatter Houses</b>	15	6.1	75	30.5	0	0	127	51.6	29	11.8	<b>246</b>	<b>100</b>

*Source: Based on Survey Conducted by the author in 2014*

The result as indicated on table 2 above shows that 10.2 per cent of heads of sample squatter households replied layout in neighborhoods of squatter houses is quite bad. In similar manner, 65.1 per cent of sample squatter households stated as it is bad, 21.5 per cent replied as the layout is good, and according to 2.4 per cent of heads of sample squatter households, the layout is quite good. Responses of 0.8 per cent of the heads of sample squatter households are neutral (table 2).

The other point of discussion on environmental characteristics of squatter houses in Burayu town is the physical order of the squatter houses. According to the heads of sample squatter houses in Burayu town, physical order of the sample squatter houses are viewed as quite bad by 8.2 per cent of the respondents, seen as bad by 76.8 per cent of the respondents, evaluated as good by 12.6 per cent of the squatter households, quite good by 1.2 per cent

of the heads of sample squatter households and responses of 1.2 per cent of the respondents are neutral (table 2 above).

Compatibility of the site in which the squatter houses are located was also judged by the view of heads of sample squatter households and according to 6.1 per cent of the respondents, the site is not compatible for residential purpose (that means it is quite bad), 11.8 per cent responded as it is bad, 51.6 per cent replied as good and according to 30.5 per cent of the heads of sample squatter households the site is quite good (table 2).

#### 4.5.7 Environmental Concerns in Squatter Settlements in Burayu Town

Almost all squatter households are concerned with different environmental related problems around their residence. The problems most of them (45.1 per cent) expressed is un removed solid wastes followed by un removed liquid wastes which accounted about 31.7 per cent of the total surveyed as shown on table 3 below.

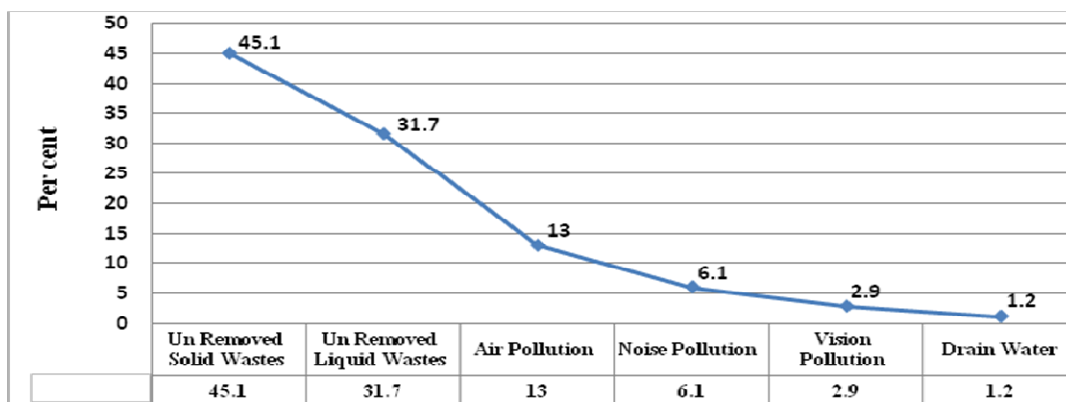
**Table 3 First Priority Concern of Heads of Sample Squatter Households About the Degraded Environment Around Their Residence in Burayu Town**

Environmental Degradation	Heads of Sample Squatter Households	
	Number	Per cent
Un Removed Solid Wastes	111	45.1
Un Removed Liquid Wastes	78	31.7
Air Pollution	32	13.0
Noise Pollution	15	6.1
Vision Pollution	7	2.9
Drain Water	3	1.2
<b>Total</b>	<b>246</b>	<b>100.0</b>

Source: Based on Survey Conducted by the author in 2014

Environmental problems related to noise pollution, vision pollution, and drain water were also presented as 6.1 per cent, 2.9 per cent and 1.2 per cent respectively. A household can have more than one environmental concern in his/her neighborhood. But, the problems listed are only one priority concern among all as selected by every household.

When the priority environmental concerns of the heads of sample squatter households are put on the line graph by decreasing order it looks like the following.



**Figure 7 First Priority Concern of Heads of Sample Squatter Households About the Degraded Environment Around Their Residence in Burayu Town**

Source: Based on Table 3

According to report of heads of sample squatter households in Burayu town, the dominant sources of solid wastes in the neighborhoods of squatter houses are mainly households which account about 54.5 per cent of the total and the minimum sources are social institutions as shown on table 4 below.

**Table 4 Heads of Sample Squatter Households Reported the Dominant Sources of Solid Wastes in their Neighborhoods in Burayu Town**

Sources of Solid Wastes	Heads of Sample Squatter Households	
	Number	Per cent
Households	134	54.5
Commercial Activities	62	25.2
Industries	18	7.3
Agricultural Activities	19	7.7
Construction	10	4.1
Social Institutions	3	1.2
<b>Total</b>	<b>246</b>	<b>100.0</b>

Source: Based on Survey Conducted by the author in 2014



In between the maximum and minimum sources, commercial activities, agricultural activities and construction activities are the other sources of solid wastes accounting 25.2 per cent, 7.3 per cent and 7.7 per cent respectively (table 4)

Comparably, the squatter households were trying to manage the solid wastes generated at least from their houses by different methods. The prevailing methods as reported by the households are incinerating and open dumping which together accounted about 47.5 per cent of the other methods (table 5).

**Table 5 Heads of Sample Squatter Households Reported Solid Waste Management Methods in Their Houses in Burayu Town**

Waste Management Methods	Heads of Sample Squatter Households	
	Number	Per cent
Open Dumping	54	21.9
Incinerating	63	25.6
Recycling	42	17.1
Reusing	23	9.3
Storing and Giving to Collectors	37	15.1
Two or More of These Options	22	9.0
Others	5	2.0
<b>Total</b>	<b>246</b>	<b>100.0</b>

Source: Based on Survey Conducted by the author in 2014

Recycling, reusing, storing, giving to the solid waste pickers, two or more of the options listed in the table 5 above and other methods are the extra methods accounting the remaining 52.5 per cent.

Dominant sources of liquid wastes in the neighborhoods of the squatter households were also reported as households, industries, local commercial activities, dairy farms, market centers, hotels, cafes and restaurants. The result as indicated on table 6 shows the dominant source which accounted 61.8 per cent is from different residential houses. Industries, local commercial activities, dairy farms, market centers, hotels, cafes and restaurants are the other sources of liquid wastes in their neighborhoods accounting from 13.8 per cent to 2.0 per cent.

**Table 6 Heads of Sample Squatter Households Reported the Dominant Sources of Liquid Wastes in their Neighborhoods in Burayu Town**

Sources of Liquid Wastes	Heads of Sample Squatter Households	
	Number	Per cent
Households	152	61.8
Industries	34	13.8
Local Commercial Activities	25	10.2
Dairy Farms	17	6.9
Market Centers	13	5.3
Hotels, Cafes and Restaurants	5	2.0
<b>Total</b>	<b>246</b>	<b>100.0</b>

Source: Based on Survey Conducted by the author in 2014

On the subject of dominant sources of noise pollution in their neighborhoods, 54.9 per cent of heads of sample squatter households reported as there are different sources and the rest 45.1 per cent reported as there is no problem of noise pollution in the area they are living. According to the report, the dominant sources are vehicles, industries, religious institutions, music shops, market centers, hotels, cafes, restaurants and others as presented in table 7 below.

**Table 7 Heads of Sample Squatter Households Reported the Dominant Sources of Noise Pollution in their Neighborhoods in Burayu Town**

Sources of Noise Pollution	Heads of Sample Squatter Households	
	Number	Per cent
Vehicles	14	5.7
Industries	26	10.6
Religious Institutions	44	17.9
Music Shops	21	8.5
Market Centers	21	8.5
Hotels, Cafes and Restaurants	7	2.9
Others	2	.8
<b>Total Reported</b>	<b>135</b>	<b>54.9</b>
No Noise Pollution in the Locality	111	45.1
<b>Total</b>	<b>246</b>	<b>100.0</b>

Source: Based on Survey Conducted by the author in 2014

## 2. Conclusion and Suggestion

Rapid population growth and respective expansion of squatter houses in Burayu town is becoming beyond the capacity of the local government. Squatter houses in the town are built in catchment areas, along rivers and other environmentally sensitive areas. To identify the collision of squatting on urban environment in relation to location of the squatter houses and generation and mismanagement of different kinds of wastes, 246 squatter households were selected by random purposive sampling method. Quantitative data and qualitative information were collected from primary as well as secondary sources and analyzed. The study utilized the survey method, interviews with selected officials, and a review of government and municipal documents to generate empirical data. The result points out that, squatter houses are negatively related to the town's environment by generation of different kinds of wastes like solid wastes, liquid wastes, drain water and other pollutions. On the other side of these, management of the wastes is not proper. This should be managed by preventing the occupation of environmentally sensitive areas; and by preventing the spread of squatter settlements in the city and the proliferation of land uses that fail to comply with the structure plan of the town. These can be done by improving formal land delivery process especially for the low and middle income groups.

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