

# Assessment of Environmental Problems in Nyala City- South Darfur-Sudan

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**Abstract:** This research aimed to detect the urban environmental problems and issues in Nyala city at southern Darfur State in the Sudan. So this research was directed to know the status of the pollution in the said city. This research was mainly directed on how to get rid of the various types of pollution and the different types of waste sources i.e. Agriculture and water, hospital wastes and other types of solid waste in the study area. Data was collected from both secondary and primary sources. The secondary sources consisted of various types of reports shown in the published literature, seminars, workshops, conferences and the worldwide webs (the internet). The primary sources included a survey questionnaire. The survey questionnaire is directed through strata sampling technique to the households of the forty two quarter of the study area. In this research both the descriptive and analytical methodology of statistic was adopted. By the descriptive approach of statistics, the central tendency as well as the scatter measurement were determined. Then chi-square analysis was carried. Then the outcomes of this research endeavor were reported as the main results. The main results included that the different wastes not to be thrown in the streets. This result supported by 90.8% of the respondents. 67,7% assumed that bricks industry also contributing to air pollution. 72,2% of the respondents said that the agricultural chemicals are the main reasons behind water pollution, and diseases which affect human and animal health and causes environmental deterioration. Moreover, 88,9% of the respondents believe that clean drinking water is not available in most parts of the city. However, respondents have different views on how to get rid of garbage and wastes. 31,3 said by using plastic bags, 22,3% throwing garbage on the streets, 11,4% transporting by cars, 1,5 % by burning which causes air pollution, and negatively influences the environment as well as human and animal health. Based on the above findings, the study concluded that, the increasing number of the population in Nyala city is the main reason for increasing pollution and pollutants which is reflected on human and animal health as well as on environmental balance. The paper recommended the redesigning and re-planning the city to accommodate the displaced people. Appropriate method to get rid of the garbage. Maintenance of the drainages and bridges. Establishing more schools and clinics and hospitals. Establishing safe sanitation system. Look for other sources for clean drinking water. Alleviation of awareness of the local communities in regard to the pollution and good handling and rationale used of agricultural chemicals.

Keyword: Waste, Sanitation, Garbage, Pollution

## 1. INTRODUCTION

The expansion and development of cities in the world are attributed to many factors. The most important one is known as pull-push-factor, which may result as a change in climatic factors (scarcity of rainfall, drought), frequent crop failure, war and conflicts, disputes over land and grazing. However, all these lead to rural-urban migration<sup>[1]</sup>.

Today, the fast growing and expansion of cities and Slums is of great concern. In Dar Fur, the rural areas became a push factor; while the urban centers became a pull factor due to ample security and accessibility to all services<sup>[2]</sup>.

In the last fifteen years, the greater Dar Fur witnessed a continual influx of migration from villages to the cities, which led to health and environmental problems as a result of high population. Obviously, this situation held huge responsibilities in the burden of the local authorities to treat the problems of environmental degradation which seems to be beyond their capabilities.

The Nyala city typically resembles the urban environment of developing countries, where the plastic bags, wastes and irons are scattered along the streets, and railroad tracks. Dispersed huge heaps of garbage with nasty smells on the sidewalk, where people excrete and urinate. Lines of women and children standing waiting their turn at the drinking water tap, and wells. The beggars at the intersection. All these phenomena are the common scenes found in cities of the developing world and are a direct consequence of poor urban environmental governance Bigio [3].

The war usually has great negative impacts on the community as well as the environment. Among these, the checks to the social demography which causes tremendous transformations in social composition and structure, social culture, norms and values of the communities in the villages as well as the cities [4]. Such changes are widely known in many cities in Sudan, particularly in war affected areas.

Nevertheless, it is observed that the relations between the host communities in the cities and displaced people are complex. When the displaced first arrive, they warmly welcomed due to the expression of solidarity and support till they get settled. But such good will often short-lived. This may be due the competition on the limited resources and services. Therefore, the displaced people will be treated with hostility by the host community [5][6].

It is well known that the Internally Displaced People (IDPs) settle in camps, where services can be provided to them by Humanitarian actors. Today, they are found not in camps or among host communities in rural areas, but in the towns and cities. This situation created many problems to the resident community, the local authority as well as the environment. Therefore, the long-term settlement of displaced populations in urban areas needs to be better anticipated, understood, and planned [7].

## 11. METHODOLOGY

Nyala is located in the middle of south Darfur state. It is the capital of south Darfur state-Sudan. It is about 900 kilometer south west Khartoum, with total population accounts to 492, 84 person (about %5.3 of total south Darfur population).

In this study, about 800 questionnaires were distributed randomly in Nyala city, where stratified sampling method was adopted. The questionnaire focused on the causes of environmental degradation and the consequences. The collected data were statistically analyzed. The results of data analysis were presented in tables and figure.

### 11.1. RESULTS AND DISCUSSION

The city hosted more than 600,000 of internal displaced families. They settled in unplanned area which lacks facilities such as sanitation, clean drinking water, drainage, health, education, electricity transportation services.

#### Pollutants

Table (1): Major sources of pollution in the study area-Nyala (2017)

S/No	Pollutant
1	Chemicals (pesticides and fertilizers)
2	Wastes
3	Stagnant water
4	Garbage: (households, restaurants etc.)
5	Lack of sanitation: excretion on open space led to the spread of many diseases
6	Drinking water
7	Vegetables.

From table (1), different sources of pollution and pollutants were identified, among these, the application of chemicals (pesticides and fertilizers) on farms, particularly which is considered a source of pollution. The chemicals seep down to the

ground and move to the wells, or washed by run – off of rainfall to the sources of drinking water like valleys and seasonal streams and pollute the water.

Waste from households, hospitals, markets are collected and dumped on open space, valleys and seasonal streams around the city (Plate 1). Thus, the mismanagement of the wastes cause many environmental and health problems to human and animals. Moreover, People often bathe, wash their clothes and swim in disgusting water.

However, due to the lack of drainage system, the accumulation of stagnant water, particularly during the rainy season is of great threat to the environmental health and quality.

Most of the population gets drinking water from polluted and contaminated sources like valleys, seasonal streams, and wells.

Furthermore, the residents consume vegetables produce near the city. Due to ignorance, farmers heavily spray the crops with chemicals (Pesticides) which are hazardous to environment, human and animal health.

In this study, 84% of the respondents confirmed that they did not get clean drinking water, while 16 % confirmed that they get clean drinking water.

The results of analysis of this study indicated that 77.9 % of respondents believe that the city lacks paved roads, sanitation, and drainage system.

The study revealed that the poor residents frequently visit hospitals due to poor hygiene. Similar case was reported from southern Ethiopia as a result of poor sanitation and health problems among the Poor people [8]. However, 35% of the respondents get medication in big hospitals in the neighborhood, while 64% of the respondents do not see this.

In general, the majority of the population (60%) agreed on new setup, oriented plans to improve the study area based on scientific ground, in such a way that to address the current environmental problems.



Plate (1): Accumulation of Wastes and Garbage -Nyal City (2017)



Plate (2): Waste burning causes Air pollution - Nyala City (2017)



Plate (3): waste thrown in the vicinity of the camp of displaced people- Nyala City (2017)

Burning of waste materials in open space near the residential area cause air pollution which harms the human (eye irritation and respiratory disease) and the animals (Plate 2). People in camps do not care about the danger of the waste materials where are thrown near to their homes (Plate 3).

#### IV. CONCLUSION AND RECOMMENDATIONS

##### **Conclusion:**

Due to the breakout of war in Dar fur, Nyala city hosted thousands of internal displaced people. This influx has exerted high pressure on already available limited resources and services like drinking water, education, health, sanitation, electricity, transportation etc. The study revealed that poverty became one of the phenomena which is reflected by increasing number of idle people as well as crimes. Furthermore, the human activities such as misuse of chemicals in agriculture, bricks manufacturing, mishandling of garbage and waste, all collectively have negatively influenced on human and animal health and upset quality.

##### **Recommendations:**

The paper recommended the redesigning and re-planning Nyala city to accommodate the displaced people. Appropriate method to get rid of the garbage and waste to be sought out. Maintenance of the drainages and bridges. Establishing more schools, clinics and hospitals. Establishing safe sanitation system. Look for other sources for clean drinking water. Alleviation of awareness of the local communities in regard to the pollution and good handling of agricultural chemicals.

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