



Access to Safe Water and Sanitation Among the Igalas in North Central Nigeria

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Abstract

This research work focused on Domestic Water Sources and Environmental Hygiene among the resident of Dekina Local Government Area of Kogi State. The researcher adopted a survey research design for the study; a total number of one hundred and ten (110) questionnaires were administered on respondents on systematic random sampling techniques. While Chi-square was used to test the hypotheses. Finding reveals that water supply Sources significantly impact on health. The major diseases affecting the inhabitants of the study area are water-borne diseases. Most women and children travel 500 to 1km to their sources of water; household rely on water vendor for their domestic water supply. It was recommended among others that more boreholes or other protected sources of water and public toilet facilities should be provided through collaborative efforts between private and public individual. It equally recommended that more controlled dumping sites should be created and open defecation should be avoided.

Keywords: Safe, Water Supply, Environmental Hygiene, Health, Kogi State, Nigeria.

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BACKGROUND OF THE STUDY

According to WHO (2015), about 663 million people worldwide had no access to adequate drinking water supplies, and nearly half of the people using unimproved water sources live in sub-Saharan Africa (UNICEF, 2015). Although, Nigeria is blessed with abundant water resources (estimated at 226 billion cubic meters of surface water and about 40 billion cubic meters of ground water) her rural populations are largely deprived and lack access to adequate water supplies (Adah & Abok, 2013). About 65 million Nigerians have no access to safe and adequate water supplies; the number rose dramatically to 90 million in 2015 (UNICEF, 2015). Nigeria did not meet the MDG target of halving by 2015 the population without adequate access to improved drinking water sources. She ranks behind many other sub-Saharan African countries

such as Ghana, Rwanda, Botswana, and Sierra Leone in access to potable water (Marks et al., 2013).

Nigeria has a large rural sector and relatively a small urban population (Utube, 2002). The rural areas generally exhibit great poverty, decayed infrastructure, poor health conditions, low access to social facilities and ignorance as a result of varying degrees geographical and political isolation (Obeta, 2009). The rural areas have long been neglected and deprived (FAO, 2005). According to Goni (2006), the negligence has led to rural-urban migration which in turn has created problems for both urban and rural areas. The current situations in some states and communities of Nigeria, serve as tragic examples of pains and sufferings experienced by people. In Yobe, Borno, Adamawa, Zamfara and Jigawa states, for instance, water shortages have aggravated the refugee and food crises, forcing some residents to migrate southwards (Goni, 2006).

A significant proportion of the Nigerian rural population continue to use rivers, ponds, lakes and harvested rain as their main sources of water supply (Ezen Wanji, 2012). This category of Nigerians faces great risks to their health and wellbeing (Obeta and Chukwu, 2013). The limited access to water supplies by a significant proportion of the Nigerian rural population has been blamed on institutional and socio-economic factors (Ezenwaji et al., 2016).

CONCEPTUAL FRAMEWORK/LITERATURE REVIEW

Water Quality and Hygiene

Water resources can be broadly grouped into two categories freshwater and marine water resources respectively. Freshwater resources consist of rivers and their plains, streams, lakes, wetlands and underground water reservoirs. Rainfall can also be grouped under freshwater resources –although man has no influence over its availability. On the other hand, marine water resources include lagoons, seas and the oceans. Sustainable welfare of man and indeed, all living things on earth depend on the wise and safe use of water. Domestic water supply is one of the fundamental requirements of human life. Without water, life cannot be sustained beyond a few days, and a lack of access to adequate water supply leads to the spread of disease. The quality of water that is consumed is well-recognized as an important transmission route for infections diarrheal and other diseases (WHO, 1993).

Water is essential to human life and the health of the environment. As a valuable natural resource, it comprises marine, estuarine, freshwater (river and lakes) and groundwater environments that stretch across coastal and inland areas. Water has two dimensions that are closely linked: quantity and quality. Water quality is commonly defined by its physical, chemical, biological and aesthetic (appearance and smell) characteristics. A healthy environment is one in which the water quality supports a rich and varied community of organisms and protects public health. Water quality in a body of water influences the way in which communities use the water for activities such as drinking, swimming or commercial purposes.

The benefits of having access to an improved drinking water source can only be fully realized when there is also access to improved sanitation and adherence to good hygiene practices. Beyond the immediate, obvious advantages of people being hydrated and healthier, access to water, sanitation and hygiene – known collectively as WASH (Water, Sanitation and Hygiene)– has profound wider socio-economic impacts, particularly for women and girls.

The fact that WASH is the subject of dedicated targets within the Sustainable Development Goal (SDG 6) is testament to its fundamental role in public health and therefore in the future of sustainable development. Indeed, access to safe water and sanitation are human rights, as recognized in 2010 by the United Nations General Assembly. For universal fulfillment of these rights to become reality, we will need the right systems: well-resourced, capable institutions delivering services and changing behaviour in resilient and appropriate ways.

In some parts of the world, there is little or no awareness of good hygiene practices and their role in reducing the spread of disease. However, it is often the case that even when people do have knowledge of good hygiene behaviour, they lack the soap, safe water and washing facilities they need to make positive changes to protect themselves and their community.

Goal 6 of the Sustainable Development Goals (SDGs)

All 193 Member States of the United Nations General Assembly unanimously agreed to Transforming our world: the 2030 Agenda for Sustainable Development (the 2030 Agenda) in September 2015. The 2030 Agenda is a plan of action for people, the planet and prosperity. Member States resolved to “end poverty in all its forms”, to take bold and transformative steps to “shift the world on to a sustainable and resilient path” and to ensure that “no one will be left behind”.

The 2030 Agenda established 17 Sustainable Development Goals (SDGs) and 169 global targets, relating to development outcomes and Means of Implementation (MoI), for the period 2015–2030. These were designed to be integrated and indivisible and to balance the social, economic and environmental dimensions of sustainable development.

The establishment of SDG 6, ensure availability and sustainable management of water and sanitation for all, reflects the increased attention on water and sanitation issues in the global political agenda. The 2030 Agenda lists rising inequalities, natural resource depletion, environmental degradation and climate change among the greatest challenges of our time. It recognizes that social development and economic prosperity depend on the sustainable management of freshwater resources and ecosystems and it highlights the integrated nature of SDGs. This first synthesis report on SDG 6 seeks to inform discussions among Member States during the High-level Political Forum on Sustainable Development in July 2018.

It is an in-depth review and includes data on the global baseline status of SDG 6, the current situation and trends at global and regional levels, and what more needs to be done to achieve this goal by 2030. The report is based on the latest data available for the 11 SDG 6 global indicators selected by Member States to track progress towards the eight global targets, plus complementary data and evidence from a wide range of sources.

Sustainable Water and Sanitation for All

Fresh water, in sufficient quantity and quality, is essential for all aspects of life and sustainable development. The human rights to water and sanitation are widely recognized by Member States. Water resources are embedded in all forms of development (e.g. food security, health promotion and poverty reduction), in sustaining economic growth in agriculture, industry and energy generation, and in maintaining healthy ecosystems.

Water-related ecosystems and the environment have always provided natural sites for human settlements and civilizations, bringing benefits such as transportation, natural

purification, irrigation, flood protection and habitats for biodiversity. However, population growth, agricultural intensification, urbanization, industrial production and pollution, and climate change are beginning to overwhelm and undermine nature's ability to provide key functions and services. Estimates suggest that if the natural environment continues to be degraded and unsustainable pressures put on global water resources, 45 per cent of the global gross domestic product, 52 per cent of the world's population and 40 per cent of global grain production will be put at risk by 2050. Poor and marginalized populations will be disproportionately affected, further exacerbating rising inequalities.

Agriculture (including irrigation, livestock and aquaculture) is by far the largest water consumer, accounting for 69 per cent of annual water withdrawals globally. Industry (including power generation) accounts for 19 per cent and households for 12 per cent. All these water uses can pollute freshwater resources.

Most wastewater from municipal, industrial and agricultural sources is discharged back into water bodies without treatment. If not treated, this pollution further reduces the availability of fresh water for drinking and other uses, and also degrades ecosystems.

There is a growing consensus that the challenges can be met by adopting a more integrated approach to managing and allocating water resources, including the protection of ecosystems upon which societies and economies depend. The concept of Integrated Water Resources Management (IWRM) is embedded in the 2030 Agenda and requires governments to consider how water resources link different parts of society and how decisions in one sector may affect water users in other sectors. It is an approach that must involve all actors and stakeholders, from all levels, who use and potentially pollute water so that it is managed equitably and sustainably.

Target 6.1: Achieve Access to Safe and Affordable Drinking Water

Achieving universal access to safe and affordable drinking water by 2030 presents a huge challenge for all countries, not just those with low incomes. The proportion of the global population using at least a basic drinking water service increased from 81 per cent in 2000 to 89 per cent in 2015.

However, only one in five countries below 95 per cent coverage is on track to achieve universal basic water services by 2030. Achieving target 6.1 means addressing the “unfinished business” of extending services to 844 million people who still lack even a basic water service, and progressively improving the quality of services to 2.1 billion people who lack water accessible on premises, available when needed and free from contamination (safely managed drinking water). It also implies going beyond households and providing access to services in schools, health-care facilities and other institutional settings.

The commitment to “leave no one behind” will require increased attention on disadvantaged groups and efforts to monitor elimination of inequalities in drinking water services. Disaggregated data on basic services are available for a growing number of countries (80), by rural and urban area, wealth group and sub-national region. This enables governments to better identify and target disadvantaged groups, but further work is required to disaggregate estimates for safely managed services.

In those countries where a large proportion of the population still lacks even a basic drinking water service, the initial focus must remain on ensuring that everyone has access to an improved drinking water source and reducing the time spent (primarily by women and girls)

collecting water. Further work is also needed to establish a commonly agreed method for assessing affordability, as payment for services should not be a barrier to accessing services.

Target 6.2: Achieve Access to Sanitation and Hygiene and end Open Defecation

Achieving universal access to adequate and equitable sanitation and hygiene by 2030 is a major challenge in many parts of the world. Target 6.2 calls for countries to end open defecation, to ensure that everyone has access to a basic toilet and to put in place systems for safe management of excreta. The proportion of the global population using at least a basic sanitation service increased from 59 per cent in 2000 to 68 per cent between 2000 and 2015. However, 2.3 billion people still lacked basic services, 70 per cent were in rural areas, and just 1 in 10 countries below 95 per cent coverage is on track to achieve universal coverage by 2030. Furthermore, 4.5 billion people worldwide lacked a safely managed sanitation service in 2015, where excreta were safely disposed of in situ or treated off-site. Target 6.2 also highlights the importance of hygiene and calls for special attention to the needs of women and girls.

Handwashing with soap and water is widely recognized as a top priority for reducing disease transmission. The global status is not yet known, but Least Developed Countries (LDCs) had the lowest coverage: only 27 per cent had basic hand-washing facilities, although coverage was higher in urban areas at 39 per cent. Some 892 million people still practice open defecation. Between 2000 and 2015, the total fell from just over 1.2 billion. Of those who still practice open defecation, 90 per cent lived in rural areas, and the majority lived in just two regions with 558 million in Central Asia and Southern Asia and 220 million in sub-Saharan Africa. A substantial effort will be needed to end this practice by 2030.

Target 6.3: Improve Water Quality, Wastewater Treatment and Safe Reuse

Collecting, treating and reusing wastewater from households and industry, reducing diffuse pollution and improving water quality are major challenges for the water sector. Ambient freshwater quality is at risk globally. Freshwater pollution is prevalent and increasing in many regions worldwide. Preliminary estimates of household wastewater flows, from 79 mostly high- and high-middle-income countries, show that 59 per cent is safely treated. For these countries, it is further estimated that safe treatment levels of household wastewater flows with sewer connections and on-site facilities are 76 per cent and 18 per cent, respectively.

Although water quality problems are largely associated with developing countries, they also persist in developed countries and include the loss of pristine quality water bodies, impacts associated with changes in hydro morphology, the rise in emerging pollutants and the spread of invasive species.

Target 6.4: Increase Water-use Efficiency and Ensure Freshwater Supplies

Few countries have the natural and financial resources to continue increasing water supplies. The alternative is to make better use of available resources. This target addresses the issue of water scarcity and the importance of increasing water-use efficiency, with the latter being a measure of the value of water to the economy and society in units of United States dollars per cubic metre (US\$/m³) of water used.

More than 2 billion people live in countries experiencing high water stress. It affects every continent, hinders sustainability, and limits social and economic development. Although the global average water stress is only 11 per cent, 31 countries experience water stress between 25 per cent (when stress begins) and 70 per cent, and 22 countries are above 70 per cent and are seriously stressed. The highest stress levels occur in Northern Africa and in Western, Central and Southern Asia. Sub-Saharan Africa has a stress level of only 3 per cent, but this figure hides the large differences between the wetter and drier parts of the region. Levels of stress are likely to increase as populations and the demand for water grow and the effects of climate change intensify.

Agriculture is by far the largest water consumer, accounting for nearly 70 per cent of all withdrawals globally and as much as 90 per cent in some arid countries. Saving just a fraction of this can significantly alleviate water stress in other sectors. Alternative water sources, such as wastewater, storm run-off and desalination, can also relieve water stress. Safe wastewater reuse and recycling is a significant untapped resource for industry and agriculture, but its use must overcome political and cultural barriers. Another option is to import food grown in water-rich countries, but this may conflict with political sensitivities as countries seek food security in terms of self-sufficiency.

Target 6.5: Implement Integrated Water Resources Management

The 2030 Agenda fully commits Member States to Integrated Water Resources Management (IWRM) and transboundary cooperation over shared water resources. Putting this into practice will be the most comprehensive step that countries make towards achieving SDG 6. Some 80 per cent of countries reported from all regions and on all levels of development. The global average degree of implementation of IWRM was 48 per cent (medium-low), but there were great variations among countries. Only 25 per cent of countries in the three lower Human Development Index (HDI) groups reached the medium-low classification. Modest progress is being made, but most countries will not meet the target by 2030 at current rates of implementation. If the components of IWRM are broken down, most progress towards implementation is found in cross-sectoral coordination and public participation at national level (62 per cent), but financing (33 per cent), gender issues (33 per cent) and aquifer management (41 per cent) are areas of concern. There is no universal approach to implementing IWRM, and each country must develop its own pathway based on political, social, environmental and economic circumstances.

Target 6.6: Protect and Restore Water-related Ecosystems

Historically, the drive for economic and social development has depended on exploiting natural resources, including water-related ecosystems. Today, as the demand for fresh water increases, awareness is focusing on ensuring that the limited capacity of the natural environment to sustain the multiple services that society has come to rely on is maintained. Water-related ecosystems underpin other SDGs, and yet they also depend on them, particularly those relating to food and energy production, biodiversity, and land and sea ecosystems. Protecting and restoring water-related ecosystems cannot be achieved without progress on these other goals and vice versa.

Study Area

The study area, Dekina Local Government Area is situated at 7.69° North latitude, 7.02° East longitude and 234 meters elevation above the sea level (<https://www.maps-streetview.com/Nigeria/Dekina>).

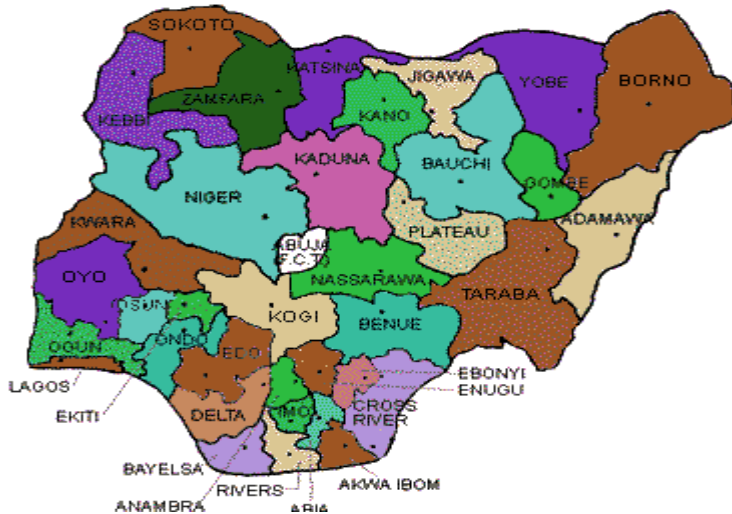


Figure 1: Map of Nigeria. (Source: <https://www.google.com/search?q=MAP+OF+NIGERIA>)

Dekina is a local government area in Kogi State with administrative headquarters in the town of Dekina. Dekina local government area is in the Eastern Senatorial District of Kogi State otherwise known as Kogi East Senatorial Zone alongside Ankpa, Bassa, Ibaji, Ofu, Idah, Igalamela-Odolu, Olamaboro and Omala local government area. Dekina local government area also forms a federal constituency alongside Bassa local government area.



Figure 2: Map of Kogi East Senatorial District
(Source: <https://www.google.com/search?q=kogi+east+map>)

Dekina local government area covers an area of 2,461km² with a population of 260,968 (National Population Census, 2006).



Figure 3: Map of Dekina Local Government Area showing the Study Area
(Source: <https://www.google.com/maps/place/Dekina>)

Dekina local government area is the largest local government area by population in Kogi State, in Nigeria and in West Africa. It is bordered in the east by Ankpa local government area, in the west by Ajaokuta, Omala and Ankpa local government areas, in the north by Bassa local government area and in the south by Ofu local government area, all in the same Kogi State. It lies about 7°41'41" North of the equator and 7° 01' 20" East of the Meridian.

RESEARCH METHODOLOGY

Research Design

The research design adopted for this study was the survey research design. Questionnaire was adopted to gather information from the respondents, while sampling element were randomly sampled. Descriptive technique was adopted to progress the data while chi-square (X^2) was used to test the data. The Eleven community in Dekina Local Government were purposefully selected.

Sample and Sampling Techniques

The sample size will be one hundred and ten (110) respondents, which shall comprise of the residents in the study area. Hence, a total of one hundred and ten (110) questionnaires will be distributed.

DATA PRESENTATION AND ANALYSIS

Test of Hypotheses

The statistical technique which will be employed in testing the hypothesis of this study is Chi-square (X^2). Before proceeding to hypothesis testing, it is necessary to outline the various steps guiding the use of chi-square in hypothesis testing.

Chi-Square Formula

$$X^2 = \sum \frac{(F_o - F_e)^2}{F_e}$$

Where: X^2 = Chi-square

F_o = Observed frequency

F_e = Expected frequency

\sum = Summation

Level of significance

A level of 0.05 (5%) which table value is 3.841 has been chosen for this study.

Decision Rule

If the calculated (X^2) value is higher than the table value, we reject null hypothesis (H_o) and accept the alternative hypothesis (H_i) and vice versa.

Hypothesis One

H_o : Domestic water supply sources have no significant impact on the health status of the residents of Dekina L.G.A, Kogi State.

H_i : Domestic water supply sources have significant impact on the health status of the residents of Dekina L.G.A, Kogi State.

Table 1: Household sources of water supply

Water sources	Frequency	%
Sream and rivers	32	29.1
Deep well	4	3.6
Private bore hole	32	29.1
Public bore hole	20	18.2
Pipe borne water	-	-
Water vendor	22	20

Table 1 above reviewed household sources or water supply by respondents 29% of the respondents indicate that sream and river as the source of their water supply while, another 29% sources for their water from private bore role and another 20%. From the above table and analyses the majority of the household gets their water supply though sream and river, private bore hole and water vendors. The quality of the above sources of water maybe questionable.

Table 2: Access to improved sanitation by respondents

Access to toilet			Access to waste Disposal		
Variables	Frequency	Percentage	Variables	Frequency	Percentage
Open defecation	65	59	Open dumpsite	67	61
Pit latrine	24	22	Stream and river	16	15
Water closet	21	19	Incineration	27	24
Total	110	100	Total	110	100

Table 2 above reveals access to improved sanitation by respondents. 59 percent of the respondents defecate in the open; similarly 61 percent of the respondents disposed their waste in the open dump site while another 15 percent dispose their waste in stream and rivers. The above results suggest that the respondents have poor access to improved sanitation.

Table 3: Response as to the Major Water Borne Diseases Affecting Members of Household

Response	No. of Respondents	Percentage (%)
Diarrheal	7	6.4
Guinea worm	4	3.6
Dysentery	11	10
Malaria/Typhoid Fever	88	80
Total	110	100

Table 2: Recalled

Fo	Fe	Fo-Fe	(Fo-Fe) ²	$\left(\frac{Fo - Fe}{Fe}\right)^2$
7	27.5	-20.5	420.3	15.3
4	27.5	-23.5	552.3	20.1
11	27.5	-16.25	264.1	9.6
88	27.5	60.5	3660.1	133.1
				X² = 178.1

Therefore, X² Calculated is = **178.1**

Decision Rule

Since the calculated value of X² (178.1) is greater than the table value (3.841), we therefore accept the alternative hypothesis (H₁) which states that domestic water supply sources have significant impact on the health status of the residents of Dekina L.G.A.

Hypothesis Two

H₀: There is no need to improve the present water supply source in Dekina L.G.A.

H₁: There is need to improve the present water supply source in Dekina L.G.A.

Table 4: Response as to whether there is need to Improve the Present Water Supply Source

Response	No. of Respondents	Percentage (%)
Yes	86	76.2
No	24	21.8
Total	110	100

Table 5: Recalled

Fo	Fe	Fo-Fe	(Fo-Fe) ²	$\left(\frac{Fo - Fe}{Fe}\right)^2$
86	55	31	961	17.5
24	55	-31	961	17.5
				X² = 35

Therefore, X² calculated is = 35

Decision Rule

Since the calculated value of X² (35) is greater than the table value of X² (3.841), we therefore accept the alternative hypothesis (H₁) which states that there is need to improve the present water supply source in Dekina L.G.A.

Summary

This research work evaluates the linkage between domestic water supply sources to health in terms of distance covered to get water, how safe the water is for consumption and the environment the water are been gotten.

This research work was divided into five chapters, i.e. chapter one to five. Chapter one deals with the background of the study vis-à-vis; research problem, significance of the study, research questions, aim and objectives and scope of the study. Chapter two is the conceptual framework and literature review, chapter three discusses the research methodology, chapter four presented and analyzed the data collected through the use of questionnaire designed by the research, while chapter five, which is the final chapter, deals with the summary, conclusion and recommendation.

Problem of water supply has been a major challenge in Dekina Local Government Area due to improper management of water infrastructures in the state, indiscriminate dumping of refuse in water channels and lack of adequate maintenance of available dump sites.

Major Findings

From the data presented and analyzed, the following are the major findings:

- Women and children spent valuable time of the day searching for water.
- Distance to sources of water supply is between 1–2km.
- The major disease affecting the inhabitants of the study area are water-borne diseases, especially typhoid/malaria, which occurs as a result of the water source and quality of water consumed.
- Most household rely on water vendor whose quality are of questionable for their domestic water need.
- The average water consumption per capita is 80 litres in the study areas.

CONCLUSION

The majority of the inhabitants depend on public/private boreholes, protected and unprotected wells, streams and rivers, as their main sources of water supply. This research work has been

able to identify the various and main source(s) of domestic water by the residents of the study area to be private boreholes and rain/stream/river as the major, followed by water vendors and public boreholes. Only few are still operating on Wells till now. Also, there is the problem of distance

Owing to lack of sanitation facilities such as latrines, toilets (both private and public) in some areas, there is open air defecation around rivers, bushes and streets. The public water sources have fallen into disrepair due to poor management, a phenomenon attributed to lack of needed skilled manpower and requisite material and financial resources.

Thus, the diseases associated with water and sanitation still constitute the most serious ones in view of the fact that they collectively exert by far the greatest health burden than any other causes of morbidity and mortality in the area. In addition to direct health effects of inadequate water supply on the population, there is an additional cost in time and energy expended in carrying water from the sources of supply to residential areas. This is particularly burdensome for drawers of water, most of whom are women and young daughters who have to travel several distances for water with negative implications for their labour productivity in all aspects of socio-economic activities.

Finally, this research work can be concluded that domestic water supply source(s) have significant impact on the health status of the inhabitant in the study area (Dekina Local Government Area, Kogi State).

Recommendations

- More boreholes should be provided through collaboration with international donor agencies and state governments;
- Open Defecation should be avoided. Toilet and latrines should be sited within the reach of the community. This is because the observation made is that there has been gross under-utilization of such essential facilities as they are inaccessible by the community;
- The State Water Board should use their expertise to choose appropriate places where the hydrological condition would ensure that boreholes continuously generate water for the community. This is very necessary because some boreholes that were drilled have been abandoned due to the fact that they yield little or no water in the dry season. This situation therefore demands that before boreholes are drilled, more reliable hydro-geological surveys must be carried out;
- For the success of water and sanitation programme, an integrated approach is necessary. Poverty reduction through broad-based poverty reduction programme; women's empowerment through formal education, among other things; basic education promotion; expanded health care and employment opportunities are critical;
- More controlled dumping sites should be created and more refuse dump bins made available through the various agencies and the local government area. This would bring to an end the indiscriminate and uncontrolled dumping of refuse.

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