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The Perspective of Stakeholders on Waste Management in Nasarawa, Nigeria

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Abstract
The study evaluated local stakeholders' perspectives on waste management in Tammah-Nasarawa, Nigeria. Recognising that the government alone cannot manage waste effectively, the study emphasised the need for people's active involvement. We employed a mixed research approach to gather information from residents and a focus group. The focus group included community leaders, a student union government representative, and officials from the directorates of works, maintenance, and physical planning at the Federal Polytechnic, Nasarawa (FPN), as well as an official from the State Directorate of Environment and Waste Management (SDEWM). Findings confirmed that most residents are off-campus students, with several houses needing toilets and wastebaskets, leading to indiscriminate waste disposal within the neighbourhood and on Polytechnic land. Additionally, residents were willing to cooperate with the government to address waste management issues. The focus group provided workable strategies for managing waste in the study area, forming the basis for developing local guidelines that outline the responsibilities of all parties in achieving a healthy environment. The findings emphasise the importance of involving local stakeholders in waste management to create a livable milieu in Tammah-Nasarawa, Nigeria.

Keywords: community involvement, habitable environment, household activities, local stakeholders, waste management.

1. Introduction

Waste generation is a common occurrence in every human environment. Effectively managing waste gives an environment a salubrious status and attracts people. All over the world, the law empowers the government to provide a salubrious living environment for its citizens (Roy, 2016). Given this role, governments have been making efforts to provide these services. However, while waste management has proven effective in some developed countries (because of the enormous resources and usage of high technology), developing countries cannot claim the same (Leal Filho, 2016; Khan et al., 2019). According to Mahmood et al. (2011), Kerdsuwan and Laohalidanond (2015), and Khan et al. (2019), waste management in developing nations is characterised by indiscriminate burning of hazardous waste in open spaces, mixing and mingling with municipal waste, and illegal recycling and resale. These practices pose a significant risk to the environment and the handlers.

Like many developing countries, Nigeria faces significant waste management challenges due to rapid urbanisation, population growth, and industrialisation (Ike et al., 2018). Additionally, a lack of or inconsistent monthly environmental sanitation has left most cities and towns insalubrious, squalid, and decrepit. Tammah, a highly populated neighbourhood in Nasarawa Local Government Headquarters, Nasarawa State, Nigeria, is a classical example. The neighbourhood's large population likely increased waste generation due to its proximity to FPN. Tammah stands out from other Nasarawa neighbourhoods due to its high waste generation and relatively passive waste management practices. Passivity breeds disastrous consequences for inhabitants of uncollected waste dump neighbourhoods, as Abubakar (2017) and Olukanni et al. (2020) earlier established cases of diarrhoea and acute respiratory diseases in Abuja, and parts of Ogun State, Nigeria. Although the local authority bears some blame for its passivity, it cannot handle the complex nature and processes of effective waste management in the neighbourhood alone.

Thus, local stakeholders need to be involved in waste management to reduce the negative implications for residents in Tammah. This study evaluates the perspectives of local stakeholders towards the current state of affairs and the need for their active involvement in waste management. The main motivation was for the locals to understand (1) the poor condition of the neighbourhood and its consequences, (2) the need for their involvement in the waste management processes, and (3) their willingness to collaborate so that local authorities can take further action to resolve the menace. Previous studies have assessed people's attitudes towards waste management facilities in Sapporo, Kutchan, and Hinode, Japan (Rahardyan et al., 2004), as well as their awareness and willingness to participate in waste management in Delhi, India (Bhawal Mukherji et al., 2016). Additionally, studies have examined the involvement of communities in managing household solid waste in Jakarta, Indonesia (Aprilia et al., 2012), Orlando East, Johannesburg, South Africa (Serge Kubanza, 2021), and the involvement of citizens in waste reduction and recycling in Xiamen, China (Xiao et al., 2017).

In Nigeria, Opoko and Oluwatayo (2016) evaluate the private-public sector collaboration in waste management in the informal settlements of Ayobo in Lagos. Olakunni et al. (2020) also investigate people's public perception and attitude towards local waste management practices in parts of Ogun State. Most of the previous studies have yielded varying results, and some have developed models that could be applied within the scope of their investigation. Accordingly, Tammah, with all its attendant waste management challenges, is one unique neighbourhood that requires local investigations and solutions. This is because local stakeholders are familiar with the area's socioeconomic and cultural characteristics, allowing them to take responsibility for their decisions.

2. Literature Reviewer

The literature extensively documents the shortcomings of local authorities in planning and managing waste. Oteng-Ababio et al. (2013) and Serge Kubanza (2021) highlight that waste management service provision is particularly challenging for

local governments in Sub-Saharan Africa due to several factors. These include economic constraints, rapid urban population expansion, land limitations, and insufficient financial resources. These challenges are compounded by the complexity of managing solid waste in growing urban environments. Community involvement in solid waste management (SWM) is increasingly seen as a crucial step in addressing these challenges. Oteng-Ababio (2011), Ulhasanah and Goto (2018), and Serge Kubanza (2021) argue that engaging local communities can significantly enhance waste management efforts. This involvement addresses the public health crisis associated with poor waste management and contributes to broader environmental sustainability.

Numerous studies have explored the role of community participation in waste management across various countries, consistently highlighting positive results from such engagement. For instance, Bhawal Mukherji et al. (2016) in Delhi, India, and Mutobe et al. (2022) in Solwezi District, Zambia, found that citizen collaboration or willingness to participate in waste management can lead to more effective and sustainable waste management practices. Serge Kubanza (2021) similarly notes that community involvement has shown promising results in Orlando East, Johannesburg, South Africa. However, the findings are rarely seen across studies. Studies by Xiao et al. (2017) in Xiamen, China, and Han et al. (2019) in six provinces in West China reveal that the willingness to participate in waste management varies significantly based on age, income status, and environmental awareness. These studies found that less-informed citizens with lower incomes and those living in less supportive environments are less likely to participate in or pay for waste management services. This suggests that socioeconomic factors and awareness levels are critical determinants of community involvement.

In Nigeria, similar divergent results have been observed. Opoko and Oluwatayo (2016) in Ayobo, Lagos, Momoh and Oladebeye (2010) in Ado Ekiti, and Olakunni et al. (2020) in parts of Ogun State report varying levels of community participation in waste management. These studies emphasise the motivation for further research to understand the factors influencing citizens' willingness to engage in waste management activities in different local contexts. Reed (2008) and Reed et al. (2018) suggest that community involvement can reduce conflict, build trust, and facilitate learning among stakeholders, increasing support for waste management projects and long-term sustainable decision-making. However, Staddon et al. (2015) point out that despite numerous studies, participatory environmental management strategies have not consistently produced positive environmental or social results. This contradictoriness suggests a need for a better perception of the conditions that cause success and failures of community engagement.

The lack of a generalised theory to explain this divergent feedback (Kochskämper et al., 2016; Reed et al., 2018) highlights the importance of contextual studies. This should focus on seeking the perspective of local stakeholders on waste management within the Tammah-Nasarawa neighbourhood. Accordingly, procedures followed to achieve these were discussed in the succeeding section.

3. Method

Participants and Design

We surveyed five groups: (1) community leaders (Chiefs of Gbagi, Mada, Igala, and Eggon), (2) the Students' Union President, (3) an SDEWM official, (4) FPN physical planning and works and maintenance officials, and (5) residents. We selected these groups based on their experience and knowledge of the neighbourhood and the problem under study. We used a sample frame of 4363 from the 2023 voter list to estimate the sample size of 189 residents, with a 2% acceptable error, 95.5% confidence level, and a p-value of 2% (Kothari, 2004).

Materials

Our data collection process was transparent and inclusive. From December 2022 to February 2023, we used questionnaires, interviews, and observations (photographs).

Procedure

We systematically distributed 189 questionnaires to the residents, and 129 were returned for a descriptive analysis. We assigned codes to the critical interview participants, naming the Chiefs as Chief001, Chief002, Chief003, and Chief004. The student representative, FPN officials, and the State Directorate of Environment were coded SUG001, FPN001, FPN002, and NSDE001, respectively. We adhere to ethical considerations in data design and collection and ensure that participants are well-informed and involved. Additionally, we used the Cronbach alpha statistics and participant groupings to measure internal consistency and reduce biases, thus ensuring validity and reliability.

4. Results and Discussion

The collective effort of waste generators, collectors, disposers, and landfill providers is crucial for addressing waste management challenges. Analyses were conducted based on residents' data and interviews with community leaders and officials.

4.1. Residents views on waste management in the study area

The study analysed residents' views, revealing that 81% were male, 16.7% were female, and 2.3% preferred not to say. The majority were 38.7%, Polytechnic students, 22.9%, Polytechnic staff, 26.6% self-employed, and 11.8% in other employment. Most residents spent four years or more in the neighbourhood, while a smaller percentage spent less than a year. The analysis reveals that 93.3% of residents in Tammah are unhappy with waste management practices, 4.7% are satisfied, and 2% prefer not to answer. Again, 45% of residents disposed of waste indiscriminately close to their premises, 50% disposed of waste at the illegal dump inside the Polytechnic, and 5% did not disclose how they disposed of waste (see Plate 1). Although residents were not given a predetermined amount they were willing to pay, they named an amount they would be willing to pay monthly for waste management.

The result shows 62% are willing to pay between ₦500 and ₦1500, i.e., an average of ₦1000 (US$0.63); 30% are willing to pay ₦2000 (US$1.25) per month for waste management in the study area. Even though the residents representing 89% believed

that waste management is the exclusive responsibility of the local authorities, thus there is no need to engage them to pay. The poor state of the environment may have influenced their willingness to pay for waste management. Previous studies confirm that residents are willing to pay for waste management (Han et al., 2019), but a more comprehensive consultation is needed in Tammah to establish a sustainable payment structure. This is because in Zambia, communities want to reduce monthly payments from US$2.7 to US$1 per month (Mutobe et al., 2022), while in South Africa (Serge Kubanza, 2021), people want to be paid for their involvement. In Ekiti and Ogun States, Nigeria, people are unwilling to pay despite the local authorities' handicapped nature (Momoh & Oladebeye, 2010; Olakunni et al., 2020).

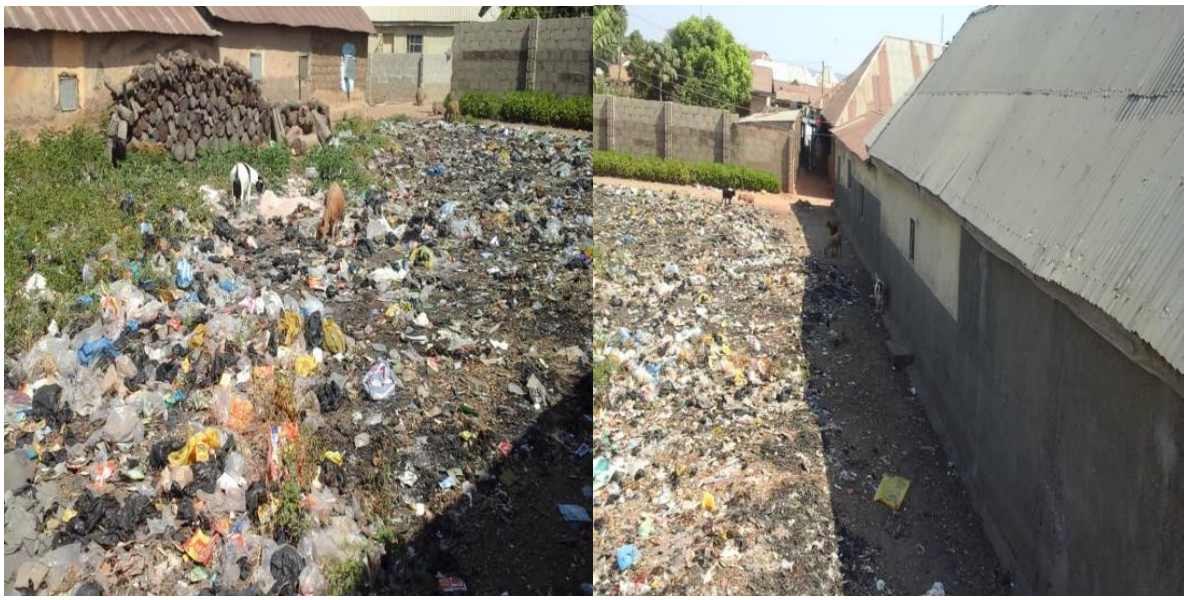

Figure 1: Decrepit residential environment in two areas of Tammah Neighbourhood
Source: Image taken by the authors

Again, most residents (72.1%) suggest blocking illegal openings on the Polytechnic's perimeter fence wall to prevent refuse dumping. However, 16.3% disagreed, and 11.6% were uncertain about the issue (See Table 1 for detailed results). The mean score (4.24) is impressive implying an urgent need to block all illegal access.

Table 1 - Residents' views on waste mitigating measures in Tammah

Variables	1	2	3	4	5	Mean	Rank
I support the idea that littered waste should be treated or recycled to reduce the unsightly neighbourhood.	15(12)	09(07)	24(19)	39(30)	42(32)	3.65	5
I am willing to make a monthly financial contribution to have waste evacuated from my residence.	12(09)	21(16)	27(21)	30(23)	39(30)	3.49	6
I will buy a wastebasket to avoid littered waste around my premises.	15(12)	06(05)	06(05)	57(44)	45(34)	3.86	4

I support the enforcement of monthly environmental sanitation in Tammah	15(12)	03(02)	09(07)	33(26)	69(53)	4.07	2
I support the idea that punitive measures should be taken against defaulters of monthly environmental sanitation.	24(19)	00(00)	06(05)	39(30)	60(46)	4.06	3
I suggest that all illegal openings on the Polytechnic perimeter fence wall be blocked	00(00)	21(16)	15(12)	00(00)	92(72)	4.24	1

1=strongly disagree; 2=disagree; 3=undecided; 4=agree; 5=strongly agree

Results in Table 1 also show the level of agreement with waste management measures and support the reintroduction of monthly environmental sanitation. During the military administration of Major General Muhammadu Buhari, monthly environmental sanitation was introduced, mandating people to clean their neighbourhoods. However, enforcement decreased over time, leading to poor residential environments in several Nigerian states. The mean score (MS) rating of 4.07, ranking second, indicates support for reintroducing these measures. The respondents also support enforcing punitive measures against defaulters (MS = 4.06). They are willing to see changes in current affairs and are eager to provide waste baskets for trash collection (MS = 3.86). Residents also reveal their willingness to contribute monthly waste evacuation contributions (MS = 3.46).

4.2. Views and perspectives of Tammah people on waste management.

The community leaders acknowledged that waste management is a significant challenge in the study area. A verbatim analysis was used in this section and subsequent sections. When asked to advise on what must be done to manage waste in Tammah and its environs, the following responses were made:

Chief001:

> *"The local authority or the Polytechnic should process the waste into different usable products and sell them, thereby raising money for the Polytechnic."*

Chief002 notes that:

> *"the Polytechnic should collaborate with the local authority to evacuate the waste to a suitable landfill."*

While Chief003 said:

> *"The Local Government health officials and non-governmental organisations should make concerted efforts to educate the people of the Tammah neighbourhood on the health hazards that improper waste disposal could cause."*

and Chief004 said:

> *"a waste evacuation van should be given to the waste unit in the Local Government Headquarters to assist with waste management."*

All community leaders suggest differing ways of managing waste without the involvement of the citizens who are the waste generators. While the people are willing to participate in waste management, as seen in an earlier analysis, community leaders could not suggest a commitment from the people. We observed a similar reluctance of community commitment to waste minimisation in Orlando East (Serge Kubanza, 2021). Again, the leaders were asked to advise on measures to combat open defecation in the Tammah neighbourhood and Polytechnic premises.

The responses were:

Chief001:

> *"... house owners should be encouraged to provide toilets and related facilities on their premises. Also, a sensitisation workshop to advise residents on the benefits of keeping their environment clean should be organised."*

Chief002:

> *"Most houses have toilets, but the residents must be ready to use the available toilets. This is because many residents prefer entering the Polytechnic land for open defecation. Thus, sensitising the people on the consequence of open defecation is necessary."*

Chief003:

> *"…that houses within the Tammah neighbourhood should be visited to ascertain the availability of toilets and other sanitary facilities. Owners of houses without these facilities should be mandated to provide them. On a second visit, owners of houses that fail to comply should be taken to court to enforce compliance."*

Chief004:

> *"It is absurd that people will behave irresponsibly in the 21st century. Property owners should provide toilets on their premises, and violators should be prosecuted."*

The results show an opposition to open defecation, suggesting that residents should be sensitised on the consequences and sanctions for violators. While people may have reasons for open defecation, as the study of Abdulai et al. (2021) in Gambaga and Nalerigu, Ghana, suggest, the practice remains unacceptable. They were asked for advice on ways of curbing waste disposal on Polytechnic land, with Chief001 responding that:

> *"The Polytechnic should increase the height of its fence and block several openings to checkmate unauthorised entry into its premises. This will prevent the Tammah residents from easily accessing the school land to dispose of waste."*

Chief002:

> *"the people within the neighbourhood should collaborate with the local authorities to secure a suitable place for waste disposal."*

Chief003:

> *"…that the Polytechnic community should engage the people of the Tammah neighbourhood and find common ground on how best to tackle the problem. Additionally, since the Polytechnic is a community of intellectuals, the institution should initiate the process of waste recycling and reuse."*

Chief004:

> *"Local government officials should be proactive in waste management, while the people should pay a stipend for periodic waste collection."*

A follow-up question was asked for community leaders to advise on effective ways of waste management in the neighbourhood. The responses were:

Chief001 states that:

> *"Since the Tammah neighbourhood houses many students, the Polytechnic (with its vast land) should concede by providing landfills for waste disposal and treatment. Additionally, every landlord should be tasked with providing a waste basket at a designated point within their premise. Finally, the local authorities should provide a waste collection and disposal van to evacuate waste within the neighbourhood to the approved site."*

Chief002:

> *"A committee should be set up involving the stakeholders from Tammah, local authorities, and the Polytechnic community to devise a better waste management method in the area."*

Chief003 advised that:

> *"With its vast human resources, the Polytechnic community should be advised to begin converting/recycling waste into several other useful products for the benefit of humanity. By doing this, the large heap of waste in and around the Tammah neighbourhood and the perimeter fence will gradually be decimated."*

Chief004 advised that:

> *"a simple way of waste management is to bury or burn them. Again, the local authorities should procure a waste van to move waste away from the illegal waste dumps."*

Differing opinions were given on ways of managing waste. While some support conversion/recycling, others believe that a waste van should be provided for waste evacuation from the Polytechnic land to authorised locations. These findings aligned with Momoh and Oladebeye (2010) and Olukanni et al. (2020), which suggest procedures for recycling waste and using a waste evacuation van as measures for waste management in Ado Ekiti and parts of Ogun State, Nigeria.

4.3. Views and perspectives of student representative on waste management in the study area.

The analysis delved into the perspectives of the SUG President and FPN regarding effective waste management methods.

> *"the local authority should partner with non-governmental organisations to evacuate waste from the neighbourhood."*

On the issue of the lack of toilets/sanitary facilities in some residences at Tammah, SUG001 responded that:

> *"the homeowners without these facilities should be mandated to build cheaper toilets in their houses."*

Again, to curb indiscriminate dumping of refuse on the Polytechnic land, the respondent states that:

> *"The Polytechnic should block the several openings that allow students and others into its premises. Again, the Polytechnic should station security personnel at designated points for surveillance. Lastly, the Polytechnic community should embark on a sensitisation campaign to curb the indiscriminate waste dumping on its premises."*

The respondent finally provides the following possible ways by which wastes could be effectively managed in the study area.

> *"Sanctions should be imposed on every violator. The local authorities should live up to their responsibilities. The government should liberalise waste collection so private individuals can establish a waste collection business for a fee. Again, off-campus students should cooperate and pay a minimal amount for waste evacuation."*

4.4. Views and perspectives of FPN officials on waste management in the study area.

The subsequent analysis centres on the Directorates of Works and Maintenance and Physical Planning officials in the FPN. Accordingly, the responses of officials

FPN001 and FPN002 on waste management were as follows:
FPN001 states that:

> *"...such wastes have undergone decomposition to become used for farm manure; as such, they should be evacuated and sold to farmers who may need them to grow their crops."*

Similarly, the response of official FPN002 was that:

> *"...waste collection centres at strategic locations within the neighbourhood should be provided. However, the Polytechnic should manage this again since 90% of the people there are Polytechnic staff and students."*

Again, when asked the question on how to curb open defecation within the premises, official FPN001 responded that:

> *"due to the high risk involved in the event of an epidemic outbreak, this should be a matter of priority. Thus, houses with toilets and other sanitary facilities should be identified, and the owners should be made to provide these facilities."*

The official FPN002 responded as thus:

> *"two things led to the problem of open defecation, including (1) a lack of understanding of the consequences and (2) a lack of funds. Thus, out of 100% of the houses in the neighbourhood, 35–40% of households do not have toilet facilities. The traditional chiefs and the local authorities, including the Ward Councillor, must advise them on the necessity and benefits of having functional toilets within their premises. Also, many inhabitants who know the importance of toilet facilities do not provide the same on their premises due to the lack of funds."*

Also, when asked to comment on what must be done to curb the dumping of wastes on the Polytechnic land (see plate 2) by the inhabitants of the Tammah neighbourhood, the official FPN001 responded as follows:

> *"The community should liaise with the local authorities to provide them with a dump site. Furthermore, the Polytechnic should mobilise its security to stop dumping refuse on its land. Furthermore, access to the Polytechnic land should be blocked, and only regulated access should be provided for students and staff of the institution."*

On the other hand, the official FPN002 states as follows:

> *"As reported before, the Polytechnic should provide and manage waste collection points within the neighbourhood. "*

When asked to freely comment on ways by which wastes on both the Polytechnic land and its environs could be effectively managed, the official FPN001 responded that:

> *"Once the dumpsite is provided, indiscriminate waste disposal will be solved. However, for the current wastes on the Polytechnic land, two things are proposed: (1) a waste evacuation vehicle should be used to remove the waste to a designated and approved site, (2) the waste should be sold to farmers for use as farm manure."*

Similarly, official FPN002 responded that:

> *"Waste disposal baskets must be provided and taken to designated sites agreed upon between the Polytechnic community and the inhabitants within the neighbourhood. All residents must take their solid waste to the agreed points so that their waste evacuation vehicle(s) will take them to the landfill provided by the local authorities."*

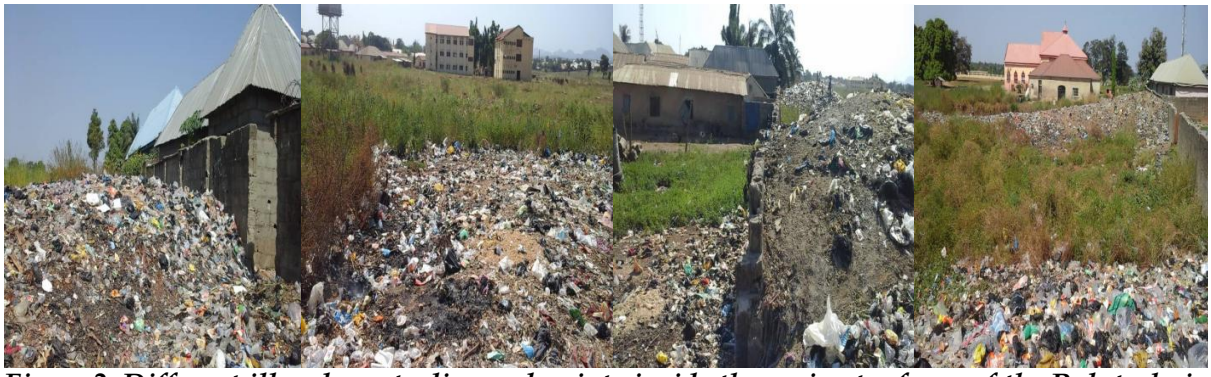

Figure 2: Different illegal waste disposal points inside the perimeter fence of the Polytechnic Source: Image taken by the authors

4.5. Views and perspectives of the SDEWM official on waste management in the study area.

Finally, the local state official NSDE001 was asked what the state authority is doing to curb indiscriminate waste disposal in the Tammah neighbourhood and the Polytechnic premises. The response was as follows:

> *"A small pick-up van collects and disposes of Nasarawa Local Government Area waste. The area is vast, and it takes time to cover it. However, the state authority is doing its best to ensure waste is adequately managed all over Nasarawa town, including the Tammah neighbourhood."*

The Tammah neighbourhood's littered waste is primarily due to nonchalant residents, but the town's small waste disposal van and limited workforce are insufficient. Furthermore, when asked what the state authorities were doing about open defecation and how waste in the Tammah neighbourhood and the Polytechnic land could effectively be managed, the official responded as follows:

> *"The challenge highlighted earlier inhibits us from effectively tackling the menace. However, property owners should be advised to do what is needed by ensuring their houses have toilet facilities. Public conveniences could also cater to people who need to use outside their premises. In addition, legislation to prohibit open defecation should be made. Also, residents should be sensitised to know the negative implications of open defecation. Additionally, the official blamed the challenge of insufficient staffing and funds to enforce compliance and control indiscriminate waste disposal. Thus, we need the involvement of the residents to solve the problem."*

The other stakeholders' analysis again confirms that the worrisome level of indiscriminate waste disposal has reached. Thus, waste within the neighbourhood and Polytechnic land has sometimes blocked access to the institution's perimeter fence (see Figure 3).

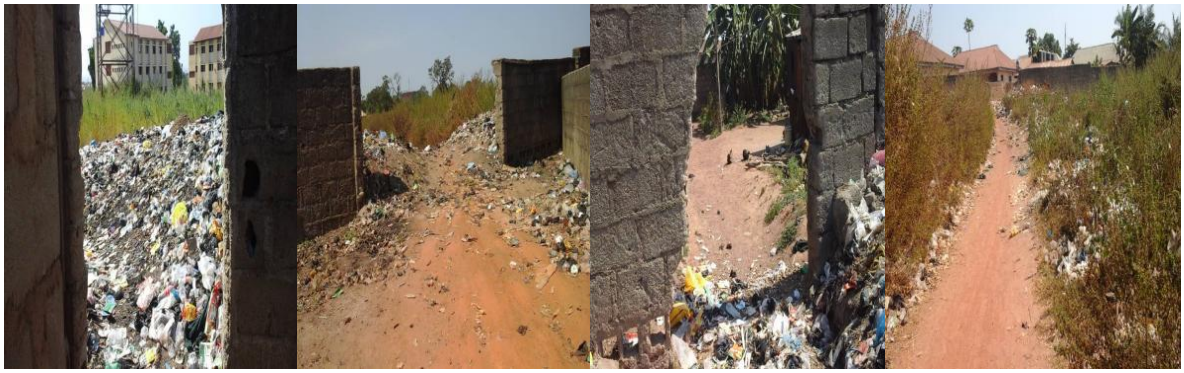

Figure 3. Opening at the Polytechnic perimeter fence wall
Source: Image taken by the authors

We, therefore, used the responses gathered from the focus groups to form strategies for efficient waste management in the study area. Accordingly, Table 2 summarises the proposed waste management framework for application in the study location.

5. Conclusions

This study aimed to evaluate the views and perspectives of local stakeholders on waste management in Tammah and Polytechnic premises in Nasarawa, Nigeria. This is with a view to building strategies that should guide the involvement of all stakeholders. Targeted parties included residents, local chiefs, student representatives, and government officials. The study area's waste management strategies require stakeholder cooperation and significant capital outlay. House owners in self-occupation must be willing to pay; homeowners in rented occupation must be willing to collect service charges for waste management. The Polytechnic community must seek funding from local and international partners to correct the long-term indiscriminate and illegal waste dumps on its land. Additionally, the Polytechnic should partner with TETFund and the Nasarawa State Ministry of Environment to assist with waste evacuation and disposal. Surveillance cameras should be installed to monitor violators. While it is practicable for people to commit their involvement in waste management in the study area, much is needed. The local authorities must provide leadership by navigating the entire process through town hall meetings whereby sincere engagements could be made. For instance, the aspect of monthly monetary payment for waste evacuation or treatment in some of the previous studies found conditional payment, unwillingness to pay or request a reduction in the amount charged. Once holistic decisions are made at the town hall meetings, the local authorities can legislate these for implementation.

Table 2 - Strategies for effective waste management in Tammah

No	Proposal action	Action by	
		Polytechnic	Tammah Households
1	Provide every building in the Tammah neighbourhood with trash bags and concrete trash cans.	The Polytechnic management should liaise with traditional chiefs in Tammah to determine the total number of buildings to be provided with concrete trash cans for the dumping of household waste.	Every household should provide a trash basket and bag in front of their apartment. In the case of rental property, the owner should give a big trash bag for use in the concrete drum.
2	When filled, trash bags should be removed from concrete trash cans and placed at designated collection points weekly.	Provide the waste collection van for weekly collection and disposal at a landfill located at a safe site within the Tammah neighbourhood and the Polytechnic land.	When trash baskets are filled, the household should remove the bag and take it to the concrete trash can in the building, where it will be moved onward to the central points of collection.
3	Provision of toilet facilities in all buildings within the Tammah neighbourhood	Sensitise every household on the benefits of having and using toilet facilities. While the health officials of the Polytechnic, in conjunction with relevant Departments within the institution, spearhead the campaign, the Polytechnic needs to partner with the health officials of the local government. The Polytechnic's security personnel must be mandated to enforce the no-open-defecation rule. In addition, offenders should be arrested and fined to serve as a deterrent to others.	Every property owner must make adequate arrangements to provide toilet facilities. The local authorities must fix a deadline for compliance. Any property owner that fails to comply within the specified period should be sanctioned.
4	Closure of unauthorised access into the Polytechnic premises.	All unauthorised openings within the Polytechnic's perimeter fence wall must be closed to prevent unauthorised persons from entering the school premises to defecate or illegally dump refuse. A thorough check and means of identification must be provided to all authorised persons.	All unauthorised persons on the school premises will be sanctioned.
5	Turning waste into wealth	The departments of Chemical Engineering and Environmental Management Technology should be mandated to draw up a proposal on how to process the heap of waste in and around the neighbourhood and school premises into a usable product.	The inhabitants of Tammah, especially the locals, should be sensitised to the plan to turn waste into farm manure or other products. This will ensure a ready market for the products.

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