



REVIEW ARTICLE

Beyond Infrastructure: Sociocultural Factors Shaping Household Waste Disposal Practices in Katsina State, Nigeria

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ABSTRACT

Background: Improper household waste disposal persists in Katsina State, Nigeria, despite periodic sanitation exercises and existing state-level environmental protection structures, yet much of the existing scholarship explains the problem primarily through infrastructure deficits, institutional capacity, or socio-demographic correlates, while sociocultural explanations have been developed mainly in southern Nigeria. **Objective:** Drawing on Social Practice Theory and its attention to materials, competences, and meanings, this conceptual, literature-based review examines household waste disposal as a sociocultural practice. **Methods:** Purposively selecting and thematically analyzing peer-reviewed studies, institutional reports, and theoretical works; because Katsina-specific evidence is limited, it is used illustratively alongside comparative Nigerian studies. **Findings:** The review shows that infrastructural shortfalls coexist with patterned household behaviours, including the delegation of disposal to children, burning waste to produce manure or ash, and dumping outside designated sites, patterns that appear consistent with gendered competences and with meanings that treat waste partly as a resource. It also suggests that appeals by traditional authority have not, on the available evidence, been sufficient on their own, although the analysis remains interpretive and does not establish causation. **Implications:** The findings imply that reliable and affordable waste collection is necessary but not sufficient, and that interventions should combine it with culturally responsive education, gender-sensitive design, and engagement with religious and traditional leaders; six testable propositions are offered to guide future field research in Katsina State.

Keywords: Waste disposal practices; household behaviour; solid waste management; sociocultural factors; Social Practice Theory; Katsina State

Introduction

Waste generation is an unavoidable by-product of human settlement, and the way households deal with it has direct consequences for public health, environmental quality and the appearance of neighbourhoods. The solid waste problem is therefore a social problem as much as a technical one. Although its roots lie substantially in socioeconomic, cultural and political conditions, much of the literature has treated waste generation and management as an engineering and technological concern (Ajani & Fakunle, 2021), as in reviews of treatment and control techniques (Dharmendra et al., 2025), and a rapid review found little substantive evidence of scholarly sociocultural approaches in Nigeria (Akintayo et al., 2023).

Solid waste management has become one of the most pressing environmental and public health challenges facing urban and semi-urban settlements worldwide. The world generated 2.56 billion tonnes of municipal solid waste in 2022, and under a business-as-usual scenario this is projected to reach 3.86 billion tonnes by 2050, an increase of about 50 per cent in under three decades (Geneva Environment Network, 2025). The challenge is sharpest in Sub-Saharan Africa and South Asia, where waste volumes are growing fastest alongside the weakest infrastructure and the most constrained municipal budgets. Basic universal collection and environmentally sound disposal in middle-income countries would require roughly 0.3 to 0.5 per cent of GDP, yet reported public expenditure in most low- and middle-income countries falls well below 0.15 per cent of GDP (Geneva Environment Network, 2025). A gap of this size helps to explain the proliferation of open dumping, burning and unregulated dumpsites across the region.

In Africa, waste collection is estimated to average only about 55 per cent, and more than 90 per cent of waste is dumped or openly burned (United Nations Environment Programme [UNEP], 2018). Nigeria, Africa's most populous country, generates an estimated 32 million tonnes of solid waste a year, of which only 20 to 30 per cent is thought to be properly managed through formal collection and disposal (Emesowum & Chiejina, 2023). Collection efficiency across Nigeria has been reported to range from about 5 per cent in some semi-urban areas to about 50 per cent in urban areas (Ogwueleka, 2009, as cited in Ladan, 2019). The remainder is handled through a patchwork of informal practices (open dumping, roadside disposal, burning, burying and discharge into drains) that reflect not only the absence of infrastructure but also the values, beliefs and social arrangements of the households concerned.

Household waste disposal is not simply a technical or logistical problem to be solved by supplying more bins, trucks and landfills. It is also a sociocultural practice, embedded in religious teaching, gender roles, family structure, communal norms and inherited ideas about cleanliness, purity and the proper handling of refuse. Two households with identical access to a functioning collection service may nevertheless dispose of their waste very differently, depending on who in the household is permitted or expected to handle it, on what local custom regards as acceptable to burn, bury or discard, and on what the surrounding community treats as normal or shameful. Fakunle and Ajani (2026) conclude, from a study of Yoruba households, that interventions need to be culturally informed.

Beyond infrastructural and institutional limitations, a growing body of work indicates that sociocultural determinants shape how people perceive waste, how they dispose of it, and whether they comply with municipal directives (Akintayo et al., 2023; Fakunle & Ajani, 2026). Yet scholarship on Northern Nigeria and on Hausa-Fulani communities remains considerably thinner than that on the South. Sociocultural explanations have been developed mainly in Southern settings, for instance in studies of Yoruba cultural elements and waste practices in Ile-Ife, Osun State (Fakunle & Ajani, 2026), and in household surveys of disposal practices and socio-demographic variables in Imo State (Emesowum & Chiejina, 2023). The sociocultural dimensions of waste disposal in Katsina State, and in Northern Nigeria more broadly, are consequently poorly understood.

Katsina State is not without solid waste scholarship. Ladan (2014) examined sewage disposal methods and their environmental health impacts in Katsina metropolis, and Ladan (2019) assessed solid waste management in Daura township. Zakariya'u (2010) considered solid waste problems in Funtua town in an unpublished M.Sc. research proposal, and Mashi et al. (2025) studied urban waste recycling among smallholder farmers in Katsina. These studies concentrate on facilities, agency performance and the adoption of recycling. To our knowledge, none was designed principally to examine the sociocultural patterning of household disposal, which is the gap this paper addresses.

Despite periodic sanitation exercises and the existence of environmental protection structures at state and local government level, indiscriminate disposal remains visible in the state. Improper disposal is widespread across Nigeria and is associated with drainage blockages, stagnant water and the proliferation of pathogens and pests (Fakunle & Ajani, 2026). In Daura, Ladan (2019) observed heaps of refuse beside collection containers, waste obstructing roads, and uncollected waste in interior neighbourhoods that vehicles cannot easily reach.

The paper makes a conceptual contribution. Using Social Practice Theory, it assembles the available evidence into an integrated account of how material arrangements, competences and meanings jointly shape disposal, and it derives six testable propositions for future primary research (Section 9). Its claims are deliberately modest, and its limitations are set out in Section 3.

2. Aim and Objectives

This paper aims to synthesise the available literature on the sociocultural determinants of household waste disposal and to apply it to Katsina State, in order to argue that improper disposal in the state cannot be explained by infrastructural deficits alone. It is better understood as the product of interaction between cultural meanings, religious teaching, gendered household responsibility, education, economic capacity and local governance structures. The specific objectives are:

- (i) to review how sociocultural factors have been treated in the Nigerian literature on household solid waste;
- (ii) to assemble and critically assess the Katsina-specific evidence;
- (iii) to develop a Social Practice Theory account of the roles of cultural norms, religion, gender, education, economic capacity and traditional authority; and
- (iv) to derive testable propositions and practical implications, organised by responsible actor.

3. Methodology and Limitations

The paper adopts a conceptual, literature-based analytical approach. It draws on scholarly studies, policy documents, institutional reports and theoretical works on household waste management, sociocultural behaviour, religion, gender, education, community participation and environmental governance. It is not a systematic review and does not follow a protocol such as PRISMA. Sources were selected purposively for their relevance to the sociocultural dimensions of household disposal, and the material was organized thematically to examine how cultural meanings, household responsibilities, social norms, material conditions and local authority structures interact. This design follows the second of the options open to authors in such circumstances: it presents the work explicitly as a conceptual contribution and claims no more than that.

Four limitations should be stated plainly. First, the Katsina-specific evidence base is small. It consists chiefly of Ladan (2014, 2019), the unpublished proposal by Zakariya'u (2010) and the study by Mashii et al. (2025), and it is supplemented by Nigerian and wider African work, much of it from Southern Nigeria. Second, Ladan's (2019) Daura survey used a purposive sample of residents living close to dump sites, of whom 68 per cent were male, so its findings cannot be generalised to all households, and women's views are under-represented. Third, because the paper reports no original field data, its arguments are interpretive and should not be read as statistical estimates of the behaviour of households in the state. Fourth, where a pattern is consistent with a sociocultural explanation, the text says so; it does not claim that the explanation has been demonstrated. The propositions in Section 9 are offered for testing, not as findings.

4. Conceptual Framework

4.1 Waste management and waste disposal

Waste management is best understood as a chain of activities rather than a single act. It covers generation, storage, collection, transport, treatment and final disposal, and its effectiveness depends on policy enforcement, infrastructure, public participation and awareness (Hoorweg & Bhada-Tata, 2012). Demirbas (2011) describes it in similar terms, as the collection, transport and processing of waste, together with the monitoring of what remains, with the aim of limiting harm to health and the environment and, where possible, recovering resources.

Waste disposal is the final link in that chain. It refers to the ways in which waste is removed, destroyed or stored so as to limit its effect on people and the environment. Common practices include open dumping, burning, burying and landfilling, with recycling and composting as recovery alternatives. Which of these a household uses depends on accessibility, infrastructure, cultural norms and socioeconomic conditions (Fakunle & Ajani, 2026; Ladan, 2019; Xu & Kang, 2025).

4.2 Social Practice Theory

The paper is organised around Social Practice Theory, which treats everyday activities such as disposing of waste as practices rather than as the product of individual attitudes alone. Shove et al. (2012) argue that a practice is held together by three interdependent elements: materials (objects, infrastructures and technologies), competences (skills, know-how and techniques) and meanings (the social and symbolic significance attached to the activity). A practice persists, or changes, as these elements are linked, reinforced or broken apart. Fakunle and Ajani (2026) draw on Schatzki's (1996) practice theory, which likewise stresses meanings, competences and materials, in their study of Yoruba households.

Applied to household waste, materials include containers, collection vehicles, drains, road access and the cost of formal services. Competences include who is able and permitted to carry waste, how it is separated and where it may be taken, and knowledge of collection schedules. Meanings include ideas of cleanliness and purity, of what is shameful or normal, and of whether waste is a nuisance or a resource such as manure. The framework is useful here because it moves attention from why individuals fail to comply to how the arrangement as a whole makes some forms of disposal easy, normal and acceptable, and others costly or improper. It also guards against both technological determinism and cultural essentialism.

5. Sociocultural Dimensions of Waste Management in Nigeria

Survey evidence at national level suggests that state waste management authorities are positively associated with sustainable household disposal practices, but the relationship is conditional. Xu and Kang (2025) report that the association is largely absorbed once regional GDP or GDP per capita is controlled, that authorities appear to matter chiefly in states with relatively low income levels, and that one important function of such authorities is to reduce the cost of collection, so that households in some, though not all, states become more able and willing to dispose of waste sustainably. Infrastructure and affordability therefore remain necessary conditions for improved behaviour, but, as the sociocultural literature below indicates, they are not sufficient ones.

A growing but still limited body of Nigerian scholarship has moved beyond generic behavioural or infrastructural models to examine how particular cultural elements shape household solid waste management. Fakunle and Ajani (2026) interviewed 36 elderly Yoruba residents across four traditional quarters of Ile-Ife, Osun State. They found that cultural norms, symbols, values, beliefs and religious practice shaped constructive practices (waste exchange, gifting, sale of used items, reuse and the use of ashes) and unhelpful ones (a belief

that waste quantities cannot be reduced, reliance on dumpsites and burning, and disposal in drains and rivers on the belief that nature will carry waste away). Their conclusion was that Yoruba cultural elements exert positive and negative influences simultaneously, and that culturally informed interventions are therefore needed. Ajani and Fakunle (2021) had earlier argued, in a critical overview of waste generation and management in Nigeria, for greater attention to the cultural dimension of environmental problems.

The wider picture is similar. Ajani and Fakunle (2021), in a meta-synthesis of Nigerian studies, observed that solid waste had mostly been presented as an engineering and technological concern, with culture neglected as a determinant of public perception, decision making and participation. A rapid review of the sociocultural dimensions of Nigeria's solid waste management likewise found little substantive evidence of scholarly sociocultural approaches, and attributed this to weak multidisciplinary integration and to insufficient conceptual and theoretical bases for waste management strategies (Akintayo et al., 2023). Fakunle's (2024) review of Nigerian studies published between 2017 and 2023 points to a persistent gap between environmental law and household practice, noting that neither the Environmental Management Act of 1990 nor the National Environmental (Sanitation) Regulations of 2007 has been matched by a corresponding change in what households do, and it concludes that the role of culture in people's participation remains understudied. Olukoju (2018) adds a historical perspective, analysing how household waste was perceived and handled in traditional Yoruba and contemporary Lagos society. Survey evidence from Iwo, in south-western Nigeria, points the same way. Waste management there was largely informal, economic incentives such as the sale of recyclables motivated nearly half of respondents who sorted waste, and environmental awareness and regulatory compliance together accounted for less than 5 per cent (Ogunbode & Aderinto, 2026). Taken together, these studies suggest that, although sociocultural case studies are now appearing, the field remains under-theorised in the Nigerian context.

6. Katsina State: Context and Evidence

6.1 Context

Katsina State lies in Nigeria's North West geopolitical zone and borders the Republic of Niger. It comprises 34 Local Government Areas. Its population is predominantly Hausa-Fulani, and Islam is the dominant religion. These features make it a particularly instructive setting for examining the interplay of religion, gender, authority and everyday practice.

6.2 Available Katsina-specific evidence

The most directly relevant study is Ladan's (2019) assessment of solid waste management in Daura township, one of the state's major emirate towns. Field visits were made on 15 April and 29 October 2018, and 47 of an estimated 60 dump sites were visited. A structured questionnaire was administered to purposively selected adult residents living near dump sites, and the Daura Zonal Officer of the Katsina State Environmental Protection Agency (KATSEPA) was interviewed. The study found a system that was inadequate and only partly effective. Collection efficiency, taken as residents' average rating, was about 55 per cent, leaving about 45 per cent of waste uncollected. Roughly 22 per cent of respondents used unauthorised locations such as open spaces and uncompleted buildings. Most respondents (about 78 per cent) said that the State Government had provided the disposal facilities (roll-on-roll-off containers, refuse collection centres and skip bins), while about 22 per cent said that communities, resident committees, wealthy individuals and traditional rulers had done so (Ladan, 2019).

The study attributes the inefficiency to infrastructural constraints, namely insufficient containers, vehicle breakdowns and poor access to interior neighbourhoods that are not easily

reached by vehicles. He also records, largely through the Zonal Officer's account, behaviours that the study treats as lapses in discipline or cooperation. Some residents dump waste outside containers or at obscure corners. Some send children to dispose of household waste, and the children, because of their height, leave it outside rather than inside the container. Some burn waste in collection centres and containers in order to make manure, which weakens the facilities. Other observations bear on the meanings attached to waste. Some farmers rely on decomposed waste from dumps as manure, and in one neighbourhood individuals provide space where waste is sorted and the compost is taken to farms. The agency's complaint to the Emir of Daura, who urged residents to use the containers, was reported not to have changed the situation (Ladan, 2019).

The study's recommendations (more vehicles and equipment for KATSEPA, regular collection, wheelbarrows or animal-drawn carts for inaccessible areas, and sustained public enlightenment by KATSEPA together with the Daura Emirate Council) implicitly recognise that equipment alone is not the whole answer. Public enlightenment and emirate-level authority are invoked precisely where household behaviour, not hardware, appears to be the limiting factor (Ladan, 2019). Three further sources complete the Katsina evidence. Ladan (2014) examined sewage disposal in Katsina metropolis (Section 8). Zakariya'u (2010), in an unpublished M.Sc. research proposal that has not been peer reviewed and is therefore treated cautiously here, described waste problems in Funtua town. Mashi et al. (2025) studied awareness, adoption and valorisation in urban waste recycling among smallholder farmers in Katsina, which is consistent with the use of waste as a resource noted in Daura.

7. Sociocultural Factors Shaping Disposal Practices in Katsina State

7.1 Cultural norms and meanings of cleanliness

Meanings of cleanliness and orderliness are not universal. They are locally constructed, and they shape what counts as an acceptable place or method for disposing of waste. Fakunle and Ajani (2026) found among Yoruba residents of Ile-Ife that cultural norms, symbols, values, beliefs and religious practice shaped constructive and harmful practices alike. At the national level, Fakunle's (2024) review concludes that the role of culture in people's participation in waste management has been understudied, and Ajani and Fakunle (2021) identify individualism, a nonchalant attitude, and the methods and cost of disposal among the factors that militate against proper management.

The Katsina evidence suggests that waste carries more than one meaning. It is a nuisance to be removed, but it is also a resource. Farmers in Daura draw on decomposed waste as manure, and some residents burn waste in containers to produce it (Ladan, 2019). A practice that appears to an agency as indiscipline may, from the household's side, be a rational use of a valued input. A comparable belief appears in Ile-Ife, where participants held that burning waste enhances soil fertility and valued the ashes (Fakunle & Ajani, 2026), which suggests that the dual meaning of waste is not peculiar to one region. Meanings of this kind can also close off resource recovery. In Ile-Ife, participants said that reusing items, accepting gifted items and working as buyers of used goods were stigmatized as signs of poverty, and that buyers had become scarcer for that reason (Fakunle & Ajani, 2026). Similar dual-edged dynamics are plausible in Hausa-Fulani communities more generally, but to our knowledge this has not been directly studied in Katsina State and should be treated as a testable proposition rather than an established finding.

7.2 Religion

Islamic teaching places considerable emphasis on cleanliness (taharah) as a component of religious and ritual life, and the literature on Islamic environmental ethics extends this concern to the surrounding environment, including the handling of waste. Mohd Omar et al. (2018) draw on the Qur'an and the Sunnah to discuss manners of cleanliness and the

avoidance of wasteful consumption as ethical resources for sound waste management. The broader volume edited by Foltz et al. (2003) situates such concerns within Islamic traditions of environmental stewardship. For a predominantly Muslim population such as that of Katsina State, religious teaching on cleanliness is therefore a plausible source of shared meanings about how waste ought to be treated.

The relationship between religious ideals and routine household behaviour is not automatic, however. The more useful analytical question is the gap between teaching and practice, and the conditions (infrastructural, economic and social) that may widen or narrow it. Mohd Omar et al. (2018) themselves observe that, in many Muslim-majority settings, modernization and economic change have been accompanied by attitudes and waste practices that fall short of Islamic ideals. A distinction between ritual purity and environmental cleanliness may also matter. A concern to keep the compound or the prayer space clean can be satisfied by moving waste out of the home, and not necessarily by ensuring that it reaches a designated site. This reading is speculative, and it is offered as a proposition for empirical testing, not as a claim about Katsina households.

Evidence from elsewhere in Nigeria cautions against treating religion as a uniformly positive force. Fakunle and Ajani (2026) found that none of the three religions practised in Ile-Ife (Christianity, Islam and indigenous religion) supported indiscriminate disposal, and that beliefs about divine displeasure with uncleanness encouraged tidiness. Yet religious taboos and fears also shaped practice in less helpful ways, for example in limiting the gifting of used items to kin, and indiscriminate dumping continued because no authority challenged it. The same mixed picture may prove true in Hausa-Fulani communities. The available literature does not establish that religious teaching directly determines disposal outcomes in Katsina State. At most, it suggests that religious framing may offer a culturally resonant entry point for public health messaging, a possibility taken up in Section 7.7 and in the recommendations.

7.3 Gender

Household waste tasks are frequently gendered in Nigerian settings. A review of gender involvement in municipal solid waste management in Nigeria emphasizes the influence of gender roles on perceptions and practices in Nigerian communities (Adeoye et al., 2024). Within the household, the daily handling of waste is commonly associated with women and children, while decisions and public-facing roles are more often associated with men. In Ile-Ife, for instance, most participants in the study by Fakunle and Ajani (2026) were women (25 of 36), which the authors attribute to the traditional Yoruba belief that women carry primary responsibility for household waste. The effect of such divisions depends on how gender is organized locally, and Hausa-Muslim communities have distinctive arrangements.

In much of Hausaland, wife seclusion (*kulle*) is a strongly held cultural norm, particularly in the emirates, and it limits the extent to which married women move in public space (Zakaria, 2001). Where such norms are observed, a woman may be unable to take waste personally to a communal or external collection point. Ladan's (2019) account of Daura is consistent with this possibility. There, residents send children to the containers, and the children leave waste outside them. This is one plausible explanation for the pattern, though not one that the study tested. Zakariya'u's (2010) proposal reports a similar pattern in Funtua, where small children were said to be solely responsible for collecting and disposing of market waste while the responsible agency was largely inactive. As an unpublished proposal, this source is cited as suggestive only.

The consequences are not trivial. Ladan (2019) records children staying at dump sites to pick items to play with and, in one reported incident, two boys drowning in a pond after dumping waste at its edge. Children from poor families and almajirai were also seen scavenging in containers. Scavenging has been associated with serious health risks in other Nigerian

settings (Afon, 2012). In competence terms, then, the person who disposes of the waste may be the one with the least strength, supervision and standing to do it well.

These interpretations must be set against the limits of the evidence. Women were a minority (32 per cent) of Ladan's (2019) respondents, a skew that the author attributes to cultural patterns whereby men are more often outdoors. The gendered account of disposal in Katsina therefore rests on inference, and future work should hear directly from women and from children, and should avoid assuming that seclusion operates uniformly across class, age, rural and urban settings.

7.4 Education

Education may plausibly be associated with more sustainable disposal, but its effects are unlikely to be uniform. At least four dimensions should be distinguished: formal educational attainment; awareness of environmental and health risks; specific knowledge of collection schedules and services; and the practical, material ability to use available services. A review of formal education for sustainability in developing countries concludes that education can raise awareness of solid waste problems (Debrah et al., 2021), but awareness is only one of the three elements in the practice-theory framework, and it does not by itself supply the materials or alter the meanings.

Evidence that awareness does not automatically translate into behaviour is available in Nigeria. In Iwo, respondents who sorted waste cited income from selling recyclables far more often than environmental awareness or regulatory compliance (Ogunbode & Aderinto, 2026). In Daura, 44 per cent of Ladan's (2019) respondents had tertiary education, yet unauthorized disposal, accumulation and burning persisted. The study does not cross-tabulate education with behaviour, so no inference can be drawn about individuals. The pattern is nonetheless consistent with the view that education alone will not overcome unreliable collection or inaccessible neighbourhoods. Evidence from Ile-Ife points in a similar direction; participants who did not sort waste said that no Yoruba norm stood in the way, and the authors attribute the low participation to individual attitudes and not to cultural prohibition (Fakunle & Ajani, 2026). Knowing about a practice, valuing it and being permitted to do it are therefore separate matters.

Education may also matter indirectly, through gender and generation. If girls' schooling and women's mobility shape who disposes of waste (Section 7.3), then education operates partly by changing household competences and the distribution of tasks. If the persons who in practice carry waste are children, then school-based environmental education may reach the actual disposers more directly than adult campaigns do. This is a proposition for testing and not an established result.

Environmental education programmes in Katsina would need to attend to local conditions. Tajuddeen (2003, as cited in Zakariya'u, 2010) is reported to link the absence of adequate public enlightenment on indiscriminate disposal in Katsina metropolis to environmental hazards and disease outbreaks. Education can improve competence and awareness, but the available literature does not support treating it as a substitute for absent or unaffordable collection services.

7.5 Poverty and infrastructure

Affordability interacts with the other factors discussed here and does not operate independently of them. At national level, state waste management authorities are associated with more sustainable household disposal, but the association is heavily conditioned by household socioeconomic status and regional income, and one of the authorities' important functions appears to be lowering the cost of formal collection in some states (Xu & Kang, 2025). Studies of willingness to pay for collection services elsewhere in Africa likewise treat

affordability as a determinant of uptake (Apio et al., 2024).

In Daura, residents attributed the agency's 55 per cent efficiency to insufficient facilities, irregular collection and the absence of service in interior neighbourhoods (Ladan, 2019). These are material constraints, and they make formal disposal costly, in time and effort if not in money, for some households. In Ile-Ife, where a collection truck charged about 1,000 naira a month, some low-income residents said they could not buy goods and then pay again to dispose of the waste (Fakunle & Ajani, 2026). Infrastructure and affordability are thus necessary conditions for improved disposal behaviour but, as the sociocultural factors above suggest, they are not sufficient ones.

7.6 Urbanisation and changing consumption

Rapid urbanisation and rising consumption are likely to change both the volume and the character of household waste in Katsina State's towns, although no study of Katsina households has measured this. Evidence from Ile-Ife shows how consumption itself can be understood culturally. Participants described waste as an unavoidable by-product of rising wants, likening it to breathing, and noted that buying goods in small packs, which poorer households often have to do, generates more packaging waste than buying in bulk (Fakunle & Ajani, 2026). The authors interpret this as a socially constructed sense that waste cannot be controlled, which weakens individual responsibility for reducing it.

The analytical link worth pursuing is that rising volumes place additional strain on collection systems that are already stretched, since only 20 to 30 per cent of waste in Nigeria is thought to be formally managed (Emesowum & Chiejina, 2023). This may in turn increase reliance on informal disposal, such as dumping and burning, whatever households' attitudes may be.

7.7 Traditional and religious authority

Emirate councils, district and ward heads, imams and community associations plausibly have the capacity to influence disposal norms, mobilise community labour and communicate public health messages in ways that formal agencies may not achieve alone. The Daura study offers some support (Ladan, 2019). Traditional rulers and wealthy individuals are among those who provide disposal facilities, and the Magajin Garin Daura is reported to have constructed a refuse collection centre in one neighbourhood. The recommendation of joint KATSEPA and Emirate Council campaigns points in the same direction.

The same study also supplies a caution. When the agency complained to the Emir of Daura and he urged residents to use the containers, the situation did not change (Ladan, 2019). An exhortation unaccompanied by reliable collection, accessible containers or competent disposers may carry little weight. Fakunle and Ajani (2026) make a related point for Ile-Ife, attributing continued indiscriminate dumping to the absence of any constituted authority able to challenge those responsible. The existing literature does not directly measure the effectiveness of traditional or religious authority in changing waste behaviour in Katsina. Any such intervention would need to contend with uneven authority across communities, the possible exclusion of women from leadership structures, local political interests, and the risk that appeals to authority substitute for, rather than accompany, improved services.

8. Environmental and Public Health Implications

Uncollected or improperly disposed household waste in Katsina State's towns can obstruct water flow and contribute to flooding, provide breeding sites for disease vectors and degrade residential environments. Improper disposal in Nigerian towns has been linked to drainage blockages, stagnant water and the proliferation of pathogens and pests (Fakunle & Ajani, 2026), and poorly managed waste more generally to flooding and vector-borne disease (Ogunbode & Aderinto, 2026). Burning waste, whether to dispose of it or as fuel, adds air pollution, as participants in Ile-Ife acknowledged when they described the acrid smoke from

cooking with combustible waste (Fakunle & Ajani, 2026). In Daura, Ladan (2019) reports that waste spilling from containers and indiscriminate dumping blocked drains, that blocked drainage contributed to a flood in 2015, that decomposing and burning waste polluted the air, and that livestock grazed on dump sites (28 goats and sheep were counted at one site in Fegi). Children's exposure through disposal and scavenging, noted in Section 7.3, adds a further health dimension, and scavenging has been associated with health risks in Lagos (Afon, 2012).

Two further Katsina-specific sources support treating the issue as one of public health and not merely of environmental aesthetics. Ladan (2014) assessed sewage disposal methods in Katsina metropolis through field visits and interviews with residents and environmental officials. He found a decentralised system in which different residential areas use different methods, and reported that all but one of the five methods identified had negative environmental health impacts, despite the efforts of household heads, resident committees and KATSEPA. Tajuddeen (2003, as cited in Zakariya'u, 2010) links the absence of adequate public enlightenment on indiscriminate waste disposal in Katsina metropolis to environmental hazards and disease outbreaks, although that account is available only through an unpublished proposal.

Together, these sources suggest a consistent picture across at least three Katsina localities (Katsina metropolis, Daura and Funtua) of disposal or sewage practices with negative health implications. None of the available studies, however, quantifies the resulting disease burden, and attributing specific health outcomes to household disposal practices would require epidemiological work that does not yet exist for the state.

9. Analytical Synthesis

Read through Social Practice Theory, the pattern suggested by this review is one of interacting rather than independent factors. The Katsina evidence, namely partial collection, unauthorised disposal, burning at collection points and child disposers (Ladan, 2019), is consistent with (though not proven to be caused by) a practice in which three things are true. Comparable material from south-western Nigeria points the same way (Fakunle & Ajani, 2026; Ogunbode & Aderinto, 2026). First, the meaning of disposal, shaped by religious and cultural understandings of cleanliness and by the view of waste as manure, is only weakly connected to formal disposal, because the materials available make compliance costly. Second, the competence to dispose of waste formally is itself gendered and age-graded, mediated by norms around women's mobility, which may help to explain why children are sent in place of adults. Third, poverty and education interact with this picture by shaping who can afford formal collection where it exists and who has the awareness and schedule knowledge to use it effectively.

Table 1 sets out how the evidence maps onto the three elements of practice, and the final column shows how far each claim rests on documented observation and how far on inference. The synthesis is offered as a coherent, literature-grounded interpretation of the Daura evidence. It is not a demonstrated causal model. The paper's central contribution is to identify these interactions as specific, testable propositions for future field research in Katsina State, and not as confirmed findings.

Table 1. Mapping the evidence onto the three elements of practice

Element of practice	Evidence reported (Katsina and Nigeria)	Sociocultural factors engaged	Evidential status
Materials	Insufficient containers, vehicle breakdowns, no service in interior areas, 55% collection efficiency in Daura (Ladan, 2019); collection cost shapes uptake (Xu & Kang, 2025); collection fee a barrier for low-income households in Ile-Ife (Fakunle & Ajani, 2026)	Poverty infrastructure; urbanisation	Documented for Daura; causal weight untested
Competences	Children sent to dispose of waste and leaving it outside containers; scavenging by children; limited knowledge of schedules and services (Ladan, 2019); women held primarily responsible for household waste in Yoruba belief (Fakunle & Ajani, 2026)	Gender; age; education; wife seclusion (Zakaria, 2001)	Behaviour documented; gendered explanation is inference
Meanings	Waste as nuisance and as manure; burning in containers to make manure; Emir's exhortation did not change the situation (Ladan, 2019); religious cleanliness norms (Mohd Omar et al., 2018); burning for soil fertility and ash, and stigma attached to reuse and gifting, in Ile-Ife (Fakunle & Ajani, 2026)	Cultural norms; religion; traditional authority	Manure and exhortation documented in Daura; religious effects untested in Katsina
Links between elements	Meanings of waste as resource interact with scarce materials to produce burning at containers, which damages the facilities; gendered competence interacts with distance to containers to produce child disposal	All of the above	Interpretive; to be tested through P1 to P6

The six propositions below follow from the synthesis and could be examined through household surveys, structured observation of disposal behaviour and qualitative work with women, children, leaders and agency staff.

P1 (meanings). Where waste is valued as manure, households will burn or pile it near collection points rather than use containers, unless an acceptable composting alternative is provided.

P2 (competences). In households where adult women's movement outside the compound is restricted, children will be the main disposers, and waste will more often be left outside containers.

P3 (education). Once collection reliability and affordability are taken into account, formal educational attainment will be only weakly associated with correct disposal behaviour.

P4 (authority). Messages delivered jointly by religious or traditional leaders and the waste agency will change behaviour more than agency messages alone, but only where collection is reliable.

P5 (materials). Neighbourhoods that vehicles cannot easily reach will show higher rates of unauthorised disposal irrespective of residents' attitudes.

P6 (affordability). Reducing the cost of formal collection will raise its use most among low-income households.

10. Recommendations

Because the analysis suggests that infrastructure alone is unlikely to resolve disposal problems, the recommendations are organised by responsible actor. They are offered as implications of an interpretive review and should be tested and adapted locally.

10.1 KATSEPA

KATSEPA should improve the reliability of collection and monitoring in inner residential areas that studies describe as poorly served, and consider alternative transport such as wheelbarrows and animal-drawn carts for less accessible neighbourhoods, as Ladan (2019) recommends. Because cost deterred some low-income households in Ile-Ife (Fakunle & Ajani, 2026) and lower collection fees appear to matter in some states (Xu & Kang, 2025), fees should be set with affordability in mind. Containers should be designed or placed so that children can use them.

10.2 Local governments

Local governments should coordinate neighbourhood-level access and work with resident committees, which Ladan (2019) shows already provide a meaningful share of disposal infrastructure.

10.3 Traditional institutions

Emirate councils and district and ward heads should engage in norm-building and community mobilisation, building on the joint KATSEPA and Emirate Council enlightenment model that Ladan (2019) recommends for Daura. Evidence from Ile-Ife, where dumping continues because no authority challenges it (Fakunle & Ajani, 2026), suggests that visible local authority matters, but the limitation noted in Section 7.7 applies: exhortation has not been enough without service.

10.4 Religious institutions

Religious institutions should consider public messaging that connects existing religious teaching on cleanliness to routine disposal practice. Its effectiveness should be tested and not assumed.

10.5 Schools

Schools can build environmental competence and practical knowledge of collection schedules and services, recognizing that awareness alone will not compensate for absent services. Because children appear to be among the people who dispose of household waste in practice, school-based programmes may be well placed to address the disposers directly.

10.6 Community groups and informal operators

Community groups can undertake local monitoring and, where locally assessed as appropriate, engage informal collectors and recyclers. Experience with waste reclaimers' organisations in Johannesburg, assessed through a zero waste index (Siwawa, 2025), is a transferable policy option from another context. It is noted here as a general possibility requiring local assessment and not as Katsina-specific evidence.

10.7 State government and environmental agencies

State environmental agencies and local governments should move beyond periodic sanitation exercises towards sustained, adequately resourced collection systems. Affordable and reliable collection is a necessary precondition for behaviour change. National survey evidence indicates that lowering the cost of collection is one important function of state waste authorities in some states (Xu & Kang, 2025), which supports attention to affordability without implying that it will be sufficient.

10.8 Researchers

Researchers should generate primary evidence across urban and rural communities in Katsina State, including the voices of women and children, to test the propositions in Section 9.

11. Conclusion

This paper has argued that household waste disposal in Katsina State should be understood as a sociocultural practice shaped by the interaction of beliefs, norms, household responsibilities, education, economic capacity, infrastructure and local authority. The literature indicates that improper disposal cannot be explained by inadequate facilities alone, just as awareness campaigns cannot succeed where households lack affordable and reliable collection. Religious teaching and traditional leadership may provide important channels for promoting cleanliness and collective responsibility, but their influence depends on institutional support and practical alternatives. Effective policy must therefore combine infrastructure development with culturally responsive education, community participation, gender-sensitive programming, affordable collection and consistent enforcement. Future studies should generate primary evidence across urban and rural communities in Katsina State so that the propositions identified in this review can be tested and refined.

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