



Psychological Analysis of Public Behavior and Perception in Waste Burning Behavior

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Abstract: Waste burning remains a common practice in many communities despite its negative impacts on health and the environment. This topic was chosen due to its urgency in the context of air pollution, particularly following the 2022 fire at the Antang landfill in Makassar, which highlighted weaknesses in waste management systems. This study aims to explore how low risk perception and strong social norms are associated with the persistence of waste burning behavior. This research employed a qualitative approach with a phenomenological method, involving five informants consisting of both perpetrators and those affected by waste burning. Data were collected through in-depth interviews and participatory observation, and analyzed using thematic techniques. The findings indicate that waste burning behavior is influenced by habits, limited waste collection services, and social norms that support the practice. Although the community is aware of health risks such as respiratory problems, stress, and decreased quality of life, the lack of alternative waste management methods reinforces this behavior. In conclusion, waste burning practices are primarily driven by psychological factors and inadequate environmental conditions. This study recommends improving waste management services, increasing public education about pollution hazards, and strengthening social norms that encourage environmentally friendly practices.

Kata kunci: Environmental behavior, Perception, Waste burning.

Abstrak. Pembakaran sampah masih menjadi praktik umum di banyak komunitas meskipun berdampak negatif terhadap kesehatan dan lingkungan. Topik ini dipilih karena urgensinya dalam konteks polusi udara, terutama setelah kebakaran di TPA Antang, Makassar, pada tahun 2022, yang menyoroti kelemahan dalam sistem pengelolaan sampah. Studi ini bertujuan untuk mengeksplorasi bagaimana persepsi risiko yang rendah dan norma sosial yang kuat berkaitan dengan persistensi perilaku pembakaran sampah. Penelitian ini menggunakan pendekatan kualitatif dengan metode fenomenologi, melibatkan lima informan yang terdiri dari pelaku dan terdampak pembakaran sampah. Data dikumpulkan melalui wawancara mendalam dan observasi partisipatif, serta dianalisis menggunakan teknik tematik. Temuan menunjukkan bahwa perilaku pembakaran sampah dipengaruhi oleh kebiasaan, terbatasnya layanan pengangkutan sampah, dan norma sosial yang mendukung praktik tersebut. Meskipun masyarakat menyadari risiko kesehatan seperti gangguan pernapasan, stres, dan penurunan kualitas hidup, kurangnya metode pengelolaan sampah alternatif justru memperkuat perilaku ini. Kesimpulannya, praktik pembakaran sampah terutama didorong oleh faktor psikologis dan kondisi lingkungan yang tidak memadai. Studi ini merekomendasikan peningkatan layanan pengelolaan sampah, peningkatan edukasi publik tentang bahaya polusi, dan penguatan norma sosial yang mendorong praktik ramah lingkungan.

Keywords: Perilaku lingkungan, Persepsi, Pembakaran sampah.

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Introduction

Environmental problems are often linked to population growth, which contributes to increasing waste production and pollution. According to the Central Bureau of Statistics (2017), environmental pollution remains a major challenge in rapidly developing urban areas. Although plastic waste has received significant public attention due to its long-term ecological impact, a more immediate and hazardous issue is the widespread practice of open waste burning. Unlike plastic pollution, which accumulates gradually, waste burning directly releases toxic pollutants such as PM_{2.5}, carbon monoxide, and dioxins into the air, posing acute health risks and degrading environmental quality. This issue became especially visible following the 2022 Antang Landfill fire in Makassar, which highlighted the persistence of burning practices and the gaps in local waste management systems. Plastic waste does not easily decompose, thereby having a negative impact on both land and water. On land, plastic inhibits soil fertility, while in water, plastic waste threatens marine life (UN Environment, 2018). The continued growth in plastic production exacerbates this situation. In 2015, Indonesia became the second-largest producer of plastic waste in the world after China, with 3.22 million tons of plastic waste produced annually (Jambeck et al., 2015). In addition to plastic waste, open burning of waste is also a serious problem. Many communities still practice waste burning despite its environmental and health risks. Waste burning produces toxic substances such as dioxins and carbon monoxide, which can cause various diseases and contribute to global warming (Wiedinmyer et al., 2014). A concrete example of this problem is the fire incident at the Antang Makassar Landfill in 2022, which was triggered by uncontrolled waste burning. This incident illustrates the challenges of waste management in Indonesia, where waste burning is still considered a practical solution despite its significant environmental risks.

This waste-burning behavior is often driven by psychological factors, such as low risk perception and long-established social habits. The Theory of Planned Behavior explains that an individual's intention to engage in a behavior is influenced by three factors, attitude toward the behavior, subjective norms within the social environment, and perceived behavioral control (Ajzen, 1980). In the context of waste burning, a positive attitude toward burning as a quick solution to

waste can increase the intention to perform it. Furthermore, social norms that support this practice and low perceived control over waste management alternatives can reinforce this behavior. To understand why people continue to burn waste despite being aware of the health and environmental risks, this study uses an environmental psychology perspective through Value-Belief-Norm (VBN) Theory (Stern, 2000) and the Norm Activation Model (NAM) (Schwartz, 1977).

According to VBN Theory, pro-environmental behavior is formed through a causal chain consisting of: values, ecological beliefs, awareness of consequences, attribution of responsibility, and personal norms, which then influence actions (Stern, 2000). Individuals with biospheric or altruistic values typically believe that environmental damage threatens human life, thereby fostering a personal norm to act more environmentally friendly. In the context of burning waste, this personal norm can manifest as a moral feeling that burning waste is wrong and should be avoided.

Furthermore, NAM asserts that prosocial and pro-environmental behavior is influenced by the activation of personal norms, which emerge when individuals recognize the negative consequences of their actions and feel responsible for preventing these impacts (Schwartz, 1977). Therefore, if residents understand that smoke from burning waste increases the risk of acute respiratory infections (ARI) in children and pollutes the surrounding air, moral responsibility may motivate behavioral changes toward alternative waste management.

The use of VBN theory and NAM in the Indonesian context is also supported by recent empirical research. A study by Setiawan, Afif, and Heruwasto (2021) showed that personal norms are a strong predictor of waste sorting behavior in the community. Another study by Soemantri et al. (2025) on urban workers in Jakarta found that bio spheric values and a sense of responsibility significantly influenced environmental behavior. Furthermore, Feriady et al. (2024) demonstrated that the VBN chain effectively explains environmentally friendly consumption behavior among the younger generation in Indonesia.

Internationally, the Value-Belief-Norm framework has been widely applied to explain pro-environmental behaviors, including pollution-related and waste-management actions (Liu et al., 2020).

Therefore, this research's conceptual framework positions values, environmental beliefs, awareness of consequences, responsibility, and personal norms as key factors shaping waste-burning behavior in Makassar. This understanding is expected to aid in the design of more effective and contextualized social interventions and waste management policies.

The purpose of this research is to analyze the psychological factors underlying waste burning behavior and explore public perceptions of waste burning. The problem-solving plan includes identifying the psychological factors that drive people to burn waste and developing environmental education recommendations that can change this behavior. This research contributes a novel contribution to the study of household waste burning in Indonesia, particularly in the context of urban communities in Makassar City.

First, it shifts the focus from the technical and environmental health approaches dominant in previous literature to an environmental psychology approach to explain why waste burning persists despite readily available information about its risks. Second, this research specifically integrates three psychological factors: risk perception, social habits, and community norms which have never been examined simultaneously in studies of waste burning in Indonesia. Third, the use of qualitative methods with purposive sampling allows for a more in-depth exploration of how communities reason about waste burning practices, going beyond the findings of quantitative surveys, which tend to be general and descriptive.

Therefore, this research offers a novel contribution in understanding by explaining how waste burning behavior is not only driven by limited waste management facilities, but also by low perceptions of health and environmental risks and the strengthening of social habits and norms that maintain the practice from generation to generation. These findings provide a foundation for the development of community-based behavior change interventions, as well as serve as a starting point for further research and the development of more sustainable waste management policies within the social and cultural context of Indonesian society.

Method

The study was conducted in two areas of Makassar, South Sulawesi, Indonesia, where household waste burning is widely practiced: (1) residential

communities located within a 1–2 km radius of the Antang landfill site, and (2) densely populated neighborhoods in the Mallengkeri area. These areas were selected due to the frequent observation of domestic waste burning near homes, roadside disposal points, and empty lots, which enabled a contextual understanding of the social and environmental dynamics surrounding the practice. Specifying these locations enhances the transferability of the findings by situating the research within communities facing similar waste management challenges.

Purposive sampling was applied to ensure that selected informants possessed direct and relevant experience with waste burning within the targeted communities. The inclusion criteria included: (1) residents living in neighborhoods where household waste burning is regularly observed; (2) individuals who either engage in burning waste or are directly affected by its smoke and environmental impacts; (3) having lived in the area for a minimum of one year to ensure contextual familiarity with community practices; and (4) being 18 years of age or older and able to provide informed consent. Exclusion criteria included: (1) individuals who had lived in the area for less than one year; (2) those with no knowledge or experience related to waste burning; and (3) individuals unable to participate due to severe health, communication, or cognitive limitations.

A total of five informants met the selection criteria. Although this may appear to be a small sample, qualitative inquiry prioritizes the depth and richness of data rather than statistical generalization. Sample adequacy in this study was determined by information power, where smaller samples are sufficient when the research aim is specific, the sample is information-rich, and participant experiences are highly relevant to the research focus (Malterud et al., 2016). Thematic repetition across interviews indicated that theoretical saturation was reached, which aligns with Guest, Bunce, and Johnson (2006), who found that key thematic saturation is often achieved within the first six qualitative interviews.

Data were collected through in-depth semi-structured interviews and participant observation, guided by an interview protocol focusing on community perceptions, motivations, and environmental health implications of waste burning. Data analysis employed a thematic analysis approach using iterative coding to identify patterns of behavior,

beliefs, and community norms. This methodological approach enabled an in-depth understanding of community behavior associated with domestic waste burning and provided empirical insights that support the development of more effective and context-appropriate waste management policies in Makassar.

Result

The results of the research data analysis indicate that the practice of waste burning in communities surrounding the research area is influenced by several interrelated psychological and environmental factors. Informants who burn waste view this practice as the most practical solution to address the accumulation and odor of waste, especially when waste collection services are deemed inadequate. One informant stated that he understood the environmental impacts of the activity but continued to do so because he saw no other alternative that could immediately resolve the waste problem in his neighborhood: "I know it's damaging to the environment, but when the waste piles up and smells bad, burning is the quickest way." (M, 34 years old). This statement indicates that low perceptions of health and environmental risks play a significant role in the decision to burn waste.

Furthermore, the practice of waste burning is perceived as a long-standing social custom and is accepted by the community as part of community norms. Another informant explained that the practice does not elicit social disapproval, reinforcing the perception that burning waste is normal and acceptable behavior: "Everyone burns trash here. It's been a long-standing habit, so no one complains." (D, 28 years old). Even residents who do not burn waste acknowledge that this practice is difficult to break because it has formed a strong collective norm. Informants affected by the smoke stated that people are aware of the health risks, but continue to engage in the practice because they see no other option: "People know it's dangerous, but they still do it because it's become a habit." (H, 30 years old). This indicates that subjective community norms tend to dominate personal norms regarding environmental concern.

Another factor reinforcing the practice of waste burning is limited waste management services and infrastructure. Informants mentioned that waste collection is irregular, resulting in waste often piling up for long periods. This situation makes burning a common response: "If the garbage truck comes

regularly, I don't burn it. But sometimes it goes on for weeks." (N, 39 years old). In the area around the Antang Landfill, informants explained that waste fires even start accidentally due to gases from decomposing waste piles or cigarette butts from scavengers. This not only disrupts activities but also has health impacts for residents, as described by an informant with respiratory problems: "When smoke enters the house, my eyes sting and I have difficulty breathing, but what else can I do?" (L, 27 years old, housewife, near the Antang Landfill).

In addition to practical motivations, there are also indications that economic considerations influence the decision to burn waste. Informants stated that using alternative services such as paid transportation or independent processing is perceived as requiring additional costs, so burning is chosen as a cheap and convenient option. As one informant stated: "If there's free and regular garbage collection, why burn?" (N).

Overall, these findings indicate that waste burning is maintained not only due to limited waste management facilities, but also due to low perceptions of environmental and health risks, social norms that reinforce the habit of burning, and the perception that other alternatives require additional costs or effort. These conditions align with the Norm Activation Model (Schwartz, 1977) and Value-Belief-Norm Theory (Stern, 2000), which explain that pro-environmental behavior is influenced by awareness of consequences, attribution of responsibility, and activation of personal norms. In the context of this study, personal norms tend to weaken due to strong social norms supporting the practice of burning and the lack of alternative waste management services that are consistently accessible to residents.

Discussion

Interview findings in the community surrounding the Antang Landfill indicate that the practice of waste burning is not simply a practical choice, but rather the result of an interaction between environmental conditions, social norms, and individuals' internal psychological processes. When analyzed using the Theory of Planned Behavior (TPB), it appears that pragmatic attitudes toward burning as reported by Subject M coincide with social norms that normalize the practice (Subject D) and low perceived behavioral control due to limited waste management services (Subject N). This pattern confirms that although

individuals may be aware of the dangers of burning, the perception of a lack of viable alternatives (low perceived behavioral control) often overrides intentions to act pro-environmentally. A similar pattern has been documented in studies of waste management behavior using the TPB which suggest that Perceived Behavioral Control may moderate the influence of risk perceptions on actual actions (Jampala & Shivnani, 2024).

Furthermore, psychological discomfort related to cognitive dissonance were evident in respondents who felt guilt for acting contrary to their environmental knowledge a dynamic relevant to understanding why maladaptive coping (e.g., burning as a quick fix) is chosen when structural options are limited. Furthermore, the direct experience of being exposed to smoke reported by Subjects L and H, such as eye irritation, chronic coughing, and impaired social activities, underscores the psychophysiological consequences described by Environmental Stress Theory which states that exposure to environmental pollutants can serve as a chronic stressor that reduces mental well-being and limits daily social functioning. Empirical studies and reviews of the impacts of waste and plastic burning on air quality and public health support these findings, stating that open burning produces PM_{2.5}, hazardous organic compounds, and other toxic emissions that contribute to respiratory illness and broader public disease burden (Evans & Stecker, 2004).

Analysis of moral norms through the Norm Activation Model (NAM) provides additional explanation, pro-environmental norms are activated only if individuals feel responsible for the consequences of their actions (ascription of responsibility) and are aware of the actual impact (awareness of consequences). In the Antang context, prolonged exposure to widespread burning practices appears to weaken the activation of these norms, preventing awareness of risks from automatically translating into pro-environmental actions. The NAM-TPB integrative study also shows that incorporating moral/norm elements into the TPB model improves the predictive ability of environmental behavior, aligning with the need for interventions that not only change facility access but also foster collective moral responsibility (Kim, 2023).

This study's contribution lies in its phenomenological approach, which positions

subjective experiences such as guilt, anxiety, and limitations on social activities as empirical evidence to enrich the currently more technical literature on waste management. At the policy and practice levels, these results emphasize that technical solutions (improved collection services and disposal facilities) need to be combined with psychosocial interventions: educational programs targeting social norms and collective responsibility, engaging community leaders to shift subjective norms, and environmental interventions that improve the quality of spaces to serve a restorative function for residents. The implementation of these measures also aligns with efforts to reduce open burning, as encouraged by guidelines and regional studies that highlight the high prevalence of waste burning in several regions of Indonesia and its significant environmental and health impacts.

The limitations of this study should be acknowledged, namely the relatively small qualitative sample and the local context of the landfill site, which limits the generalizability of the findings. Therefore, further research should utilize mixed-method designs or quantitative surveys that measure the effects of perceived behavioral control, normative influence, and stress or health outcomes on larger samples and across various urban and peri-urban contexts. Furthermore, experimental intervention studies testing the effects of moral-message-based environmental education versus improved service facilities on waste-burning behavior would be helpful in mapping the most effective strategies.

Conclusion

This study shows that waste-burning behavior is influenced by psychological factors, risk perception, social norms, and limited waste management services. Burners consider it a practical solution despite being aware of the negative impacts on health and the environment. These impacts include health problems and reduced quality of life due to air pollution. Negative perceptions of burning indicate risk awareness, but limited waste management alternatives hinder changes in behavior. This study recommends improving waste management services, educating people about the dangers of burning, and strengthening social norms that support environmentally friendly practices.

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