



# Rethinking religious ecotheology: The material ecology of *turats* and the paradox of sacred waste in Islamic environmental thought

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## ABSTRACT

**Background:** Contemporary Islamic ecotheology has increasingly promoted environmental ethics, yet it pays limited attention to the ecological consequences of the material life cycle of sacred texts. Although *turats* (Islamic textual heritage) has been revitalized as a foundation for Islamic environmental thought, its preservation and disposal generate the paradox of sacred waste, revealing a gap between textual reverence and ecological responsibility. **Methods:** This study employed a qualitative case study design involving three urban pesantren in Jakarta, including Asshiddiqiyah, Darunnajah, and Darurrahman. Data were collected through in-depth interviews, participant observation, and document analysis, and analyzed using Fairclough's Critical Discourse Analysis to examine the interplay between religious discourse, institutional practices, and ecological implications. **Findings:** The findings show that sacred waste management is predominantly governed by symbolic interpretations of textual sanctity, resulting in practices such as open burning, long-term storage, and limited reuse that generate environmental risks. These practices reflect an epistemological separation between *ta'zhim al-nuṣūṣ* (reverence for sacred texts) and *hifz al-bī'ah* (environmental preservation), constraining the integration of ecological responsibility into pesantren governance. **Conclusion:** Islamic ecotheology requires an epistemological shift from symbolic environmental ethics toward material ecological responsibility. Integrating theological values with sustainable waste management enables pesantren to function as ecotheological laboratories that reconcile textual sanctity with environmental stewardship and strengthen the practical contribution of Islamic environmental thought. **Novelty/Originality of this article:** This study introduces the Material Ecotheology of *Turats* as a new analytical framework that conceptualizes *turats* as a material entity participating in ecological processes. It also proposes the Sacred Environmental Stewardship Theory (SEST), integrating *maqāṣid al-sharī'ah*, textual reverence, and environmental stewardship into a unified model for Islamic ecotheology and sustainable sacred waste governance.

**KEYWORDS:** Islamic ecotheology; material religion; pesantren ecology; sacred waste; *turats* sustainability.

## 1. Introduction

The escalating global environmental crisis has fundamentally reshaped how humanity perceives the moral and spiritual relationship between religion and nature. As the modern paradigm driven by instrumental rationality and economic utilitarianism fails to provide sustainable ecological solutions, new awareness emerges concerning the crucial role of religious worldviews in shaping human attitudes toward the environment (Ives et al., 2024). Pascual et al., (2023) affirm that plural value systems including spiritual and cultural dimensions constitute an essential foundation for planetary sustainability. Within this

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broader intellectual landscape, ecotheology has evolved as an interdisciplinary field linking spiritual consciousness with ecological ethics. It rejects the notion that technological innovation alone can heal the wounds of the planet; what is equally required is an ethical and theological transformation that redefines humanity's position within creation (Kane & Perry, 2024).

Recent studies increasingly underscore the ecological potential of sacredness. Zannini et al. (2021) demonstrate that sacred natural sites across various religious traditions play a vital role in biodiversity conservation, indicating that sacredness itself possesses ecological agency. However, as Koehrsen et al. (2021) caution, religious ecology is not free from tension. Without critical reinterpretation, sacred doctrines may reinforce anthropocentrism or perpetuate ritual practices that inadvertently damage ecosystems. Hence, religion must be examined not only as a moral source for ecological care but also as a site of self-reflection capable of assessing its material and doctrinal consequences for the environment.

Indonesia provides a unique context for such re-evaluation. In recent years, the Ministry of Religious Affairs (MoRA) has institutionalized Islamic ecotheology through a series of policies and programs. Ministerial Decree No. 244 of 2025 establishes ecotheology as one of MoRA's eight national priorities for the 2025–2029 period (MoRA, 2025). This policy aims to integrate Islamic values into environmental ethics and promote faith-based ecological awareness through education, worship, and social engagement. One of its key innovations is the re-actualization of *turats*, the classical Islamic textual heritage encompassing the works of earlier scholars as a spiritual and intellectual foundation for environmental ethics (Indah, 2025). Through *turats*, Muslims are encouraged to cultivate ecological awareness grounded in the ethical interpretation of sacred texts and traditions, aligning spirituality with ecological responsibility.

Yet, the integration of *turats* within state-sponsored ecotheological discourse reveals an overlooked paradox. While *turats* serves as a moral compass for environmental management, its material dimension manifested in damaged mushaf and *kitab kuning* produces a distinct ecological problem: the emergence of sacred waste. In Islamic educational institutions such as pesantren, damaged Qur'anic manuscripts and religious books are treated as sacred objects (*muqaddasat*) that cannot be discarded through ordinary means (Al-Bahuti, 2009; al-Dasuqi, 2010; al-Haitami, 2001). Their sanctity demands respectful disposal, commonly through ritual burning or burial. However, these methods by particularly open burning, can generate air pollution and chemical residues, creating an ecological contradiction between reverence and environmental harm. Thus, *turats*, while serving as a source of ecological ethics, simultaneously generate material burdens for the ecosystem.

This paradox exposes a deeper epistemological gap in contemporary Islamic environmental thought, namely the separation between symbolic ecotheology (focused on doctrine and values) and material ecotheology (concerned with objects, rituals, and environmental practices). Although Islamic ecotheology has developed as a discourse on divine creation and moral responsibility, it seldom addresses the "material afterlife" of sacred objects once their ritual value expires. Consequently, there remains limited understanding of how formerly sacred religious artifacts interact with ecological systems after their spiritual functions cease. Addressing this conceptual void requires rethinking *turats* not merely as a textual authority but as a material entity participating in ecological circulation.

Previous studies on religion and sustainability have largely emphasized the symbolic, behavioral, and narrative aspects of religious traditions (Okyere-Manu, 2022; Stacey, 2024). Sabir & Tennhardt (2025) observe that most scholarship adopts psychological, social, or cultural approaches while neglecting the ecological agency of material religious artifacts. Lin et al. (2024), for instance, empirically measure the correlation between religious practices and air quality but overlook the physical residues of those practices. Even within the emerging literature on sacred waste, discussions remain limited to non-textual materials such as temple offerings or ritual flowers (Kumar et al., 2024). Stengs (2023)

opens an important dialogue on the concept of sacred waste, yet the framework has not been applied to Islamic educational or textual contexts. Hence, despite the growing prominence of material religion and environmental humanities, their intersection with Islamic textual heritage remains underexplored.

This research seeks to fill this academic gap by proposing a new analytical lens termed the Material Ecotheology of *Turats*. This framework reconceptualizes *turats* as both theological discourse and material ecology. It asserts that Islamic environmental thought must account for the physical life cycles of sacred texts and artifacts, since sacredness itself leaves ecological traces. By combining theological interpretation with material ecological analysis, this approach expands ecotheology from a purely symbolic ethic to a tangible environmental responsibility. It also challenges the romantic tendency in religion-and-ecology studies that often idealizes religion as a redemptive force without examining its ecological contradictions.

Accordingly, this study contributes to global ecotheological discourse in three key ways. First, it introduces Islamic textual heritage as a case through which to theorize the materiality of the sacred ecological sphere. Second, it extends the concept of sacred waste from ritual residues to the materiality of sacred manuscripts, emphasizing how religious knowledge intertwines with ecological processes. Third, it situates this debate within Indonesia's pesantren landscape, where the tension between reverence and disposal reveals the complex, living nature of Islamic ecological theology.

The central question guiding this research is: How does the material ecology of *turats* shape and challenge Islamic ecotheology in contemporary Indonesia? By exploring this question, the study seeks to bridge the epistemic divide between doctrinal ideals and ecological realities. The subsequent sections elaborate on the theoretical foundations of material ecotheology, the historical position of *turats* in Islamic epistemology, and empirical findings on sacred waste management within pesantren communities. Through this multilayered inquiry, the research positions religion not merely as a moral voice for ecological concern but as a critical arena where sacred meaning, material practice, and environmental consequence dynamically intersect.

This study therefore aims to rethink Islamic environmental thought through the material life of *turats*, particularly how sacred texts and their residual forms shape ecological sensibilities in pesantren practices. This study contributes to the field of environmental humanities by articulating an Islamic model of material ecology that reconceptualizes sacred texts as agents within environmental systems, thus extending the discourse of material religion into Islamic ecotheology. By introducing the notion of 'sacred waste,' the paper reframes Islamic textual heritage not as a static archive but as an active participant in the ecological cycle, challenging the symbolic dominance of scriptural ethics.

## 2. Methods

### 2.1 Research design and setting

This study employs a qualitative approach with a case study design, allowing for an in-depth exploration of the social dynamics and symbolic meanings underlying religious practices (Creswell, 2013). This approach is appropriate because qualitative research positions the researcher as the primary instrument in interpreting the construction of social reality from participants' perspectives (Denzin & Lincoln, 2018). Using the case study design, the research investigates the theological and ecological dimensions of sacred waste management across three major urban pesantren in Jakarta: Asshiddiqiyah, Darunnajah, and Darurrahman. These pesantren were purposively selected for their strong attachment to *turats*-based intellectual traditions and for representing how Islamic educational institutions negotiate spiritual continuity amid the pressures of urban modernity. As Yin (2018) asserts, the selection of information-rich cases is essential for generating contextual and nuanced understanding. The metropolitan context, where rapid urbanization intersects

with religious education, provides a critical lens for examining how sacred values are translated into adaptive yet tradition-rooted ecological practices.

## 2.2 Data sources and data collection

Primary data were collected through in-depth interviews with key informants, including *kiai* (Islamic scholars), librarians, and senior students responsible for preserving, repurposing, and disposing of worn-out *mushaf*, *kitab kuning*, and other religious materials. Such interviews facilitate an interchange of views through which meaning is co-constructed between researcher and participants (Kvale, 1996). Participant observation was also conducted to document actual practices while interpreting the symbolic and ritual dimensions accompanying each act of sacred waste management. Field notes included both verbal and nonverbal expressions, providing deeper insight into the dialogical relationship between theology and ecology in everyday pesantren life.

Secondary data were drawn from policy documents of Indonesia's Ministry of Religious Affairs, classical Islamic literature on environmental ethics, including Seyyed Hossein Nasr's seminal works emphasizing the spiritual dimension of nature management (Nasr, 1996), as well as relevant national and international environmental regulations. The combination of interviews, observations, and documentary sources enabled triangulation across textual, institutional, and socio-cultural dimensions, thereby strengthening the contextual validity and analytical depth of the study (Denzin, 1978).

## 2.3 Data analysis, reflexivity, and ethical considerations

Data analysis employed Critical Discourse Analysis (CDA) based on Fairclough's (1992) three-dimensional framework, encompassing textual analysis, social practice, and institutional context. This approach enables the researcher to examine how ecological meanings are linguistically and ideologically constructed within religious discourse while also revealing the institutional power relations that sustain them. Consistent with Wodak and Meyer (2016), CDA extends beyond textual examination to illuminate the social processes through which meaning is produced and reproduced within contexts of power and ideology. The analytical process involved data reduction, interpretive coding, and conceptual synthesis to establish connections between sacred symbolism and ecological praxis.

Throughout the research process, reflexivity was maintained to critically examine the researcher's epistemic position within the framework of Islamic scholarship. Reflexivity involves critical engagement with the relationships among the researcher, research subjects, and the knowledge produced through the research process (Finlay, 2002). Participant consent was obtained prior to data collection, and all procedures involving sacred materials adhered to pesantren norms and religious sensitivities.

The methodological framework ultimately informed the development of the Sacred Environmental Stewardship Theory (SEST), a conceptual model that situates environmental responsibility within the sacred and doctrinal dimensions of Islamic religiosity. Rather than treating environmental management solely as a technical concern, the framework emphasizes the moral and symbolic ecology governing human interaction with the material residues of religious practice. By grounding the analysis in *turats* and lived religious experience, the study positions the pesantren as a space where spiritual ecology, ethical reflection, and environmental praxis converge.

## 3. Results and Discussion

### 3.1 Theoretical framework: From symbolic to material ecotheology

In contemporary debates on religion and ecology, the shift from symbolic to material frameworks marks a profound transformation in how the sacred is conceived and

experienced. Earlier approaches to religious ecology often privileged symbolic interpretation, understanding nature as a sign of divine presence (*āyāt Allāh*) and positioning humans as moral stewards responsible for maintaining cosmic balance. This “symbolic ecotheology” aligns with the Qur’anic discourse of *tawḥīd* (divine unity) and *khilāfah* (trusteeship), emphasizing metaphysical harmony and ethical responsibility. However, as the ecological crisis exposes the limits of purely moral or representational ethics, scholars across disciplines have turned toward the material turn in religious studies, seeking to understand religion as embodied, sensorial, and enacted through material forms (Meyer, 2010; Morgan, 2017).

### 3.1.1 From symbolic mediation to material mediation

Birgit Meyer’s (2010) framework of material religion argues that religious life cannot be reduced to belief systems or doctrinal meanings but must be approached as a field of material mediation. Religious actors encounter the divine not merely through symbols but through tangible substances such as texts, relics, sounds, scents, and gestures that enable and structure their experience of transcendence. Similarly, Morgan (2017) highlights how material forms “make religion happen” by shaping the sensory economies through which sacredness is felt and sustained. The material, therefore, is not a passive vessel of meaning but an active medium through which divine power becomes socially and ecologically real.

Within Islamic thought, *turats*, the inherited body of religious knowledge embodied in manuscripts, commentaries, and ritual practices has traditionally been treated as a textual archive, the locus of doctrinal authenticity. Yet, viewed through the lens of material religion, *turats* also functions as a material ecology: a living assemblage of substances, tools, and practices that circulate, decay, and regenerate within the lifeworld of Muslim communities. Manuscripts deteriorate, ink fades, pages are buried, burned, or reused; and in each of these transformations, the material form of *turats* participates in the ecological metabolism of the sacred. The material ecology of *turats* thus refers to the dynamic relationship between the physical substance of religious heritage and the ecological systems that sustain and are sustained by it.

### 3.1.2 Thing-power and the agency of the sacred object

Jane Bennett (2010) concept of thing-power deepens this analysis by proposing that material entities possess a form of vibrancy or agency that exceeds human intentionality. Objects, in Bennett’s vital materialism, are not inert matter but active participants in assemblages that shape human and nonhuman worlds. This theoretical insight resonates with Islamic understandings of *barakah*, understood as the generative, overflowing blessing inherent in sacred things. The mushaf, the tasbīḥ, or even the residual ink of Qur’anic verses, are not merely symbols of holiness but vehicles of a divine vitality that demands ethical response.

Seen in this light, the material ecology of *turats* discloses a paradox of sacred waste: the tension between veneration and disposal. When a Qur’anic text becomes damaged or illegible, it remains materially charged with sanctity. Its disposal, whether through burial, immersion, or controlled burning, constitutes not merely a ritual act of respect but an ecological negotiation of sacred agency. The thing-power of the sacred text compels human communities to invent ecological ethics of care, conservation, and transformation that extend beyond anthropocentric stewardship.

### 3.1.3 Materia ecotheology as relational ontology

This reorientation toward the material also requires a rethinking of theological ontology itself. If symbolic ecotheology interprets nature as a sign pointing to the divine, material ecotheology situates divinity within the relational processes that constitute life. Rather than seeing matter as a lower order of being, this framework recognizes its

participation in divine creativity (*ṣanʿ Allāh*). The Qurʾan's own materiality, the ink, parchment, and voice that carry revelation, attests to a theology in which creation is not separate from, but continuous with, the sacred word.

Such a view converges with Islamic philosophical traditions that emphasize the unity of existence (*waḥdat al-wujūd*) and the spiritual significance of material forms. As Ibn ʿArabī and later scholars articulated, the material world is a site of divine self-disclosure (*tajallī*). Within this framework, *turats* is not simply a textual record of revelation but an ecological system through which divine presence circulates materially, through writing, recitation, and the care of sacred objects. The act of preserving, repairing, or disposing of *turats* thus becomes a theological act of sustaining divine immanence within the world.

### 3.1.4 *Turats as an ecological actor*

Reconceptualizing *turats* as an ecological actor allows us to transcend the dualism between text and environment, or between culture and nature. The material ecology of *turats* foregrounds the ways in which sacred texts and their custodians co-produce an environment imbued with theological meaning. When pesantren students engage in the ritualized preservation of old manuscripts, or when they recycle Qurʾanic pages to prevent desecration, they are not merely performing acts of piety, they are participating in an ecological network that binds human, material, and spiritual agencies.

In this sense, *turats* operates analogously to what Latour (2005) terms an actant: an entity that modifies states of affairs through its participation in a network of relations. The *mushaf* or *kitab kuning* exerts agency by organizing social behavior, ethical norms, and ecological responses. The handling of sacred material generates what could be called an *eco-ijtihād*, a jurisprudence that extends the logic of ritual purity (*ṭahārah*) to environmental purity (*naẓāfah*). The ethics of handling sacred waste thus becomes a site where theological thought meets ecological practice.

### 3.1.5 *Toward an Islamic material ecotheology*

Bringing together these strands, the framework of material ecotheology proposed in this study moves beyond symbolic mediation to emphasize the performative and ecological agency of sacred matter. It suggests that the vitality of *turats* lies not only in its intellectual content but in its capacity to circulate, decay, and renew life within the material world. By tracing the interactions between sacred texts, ecological processes, and human stewardship, this approach reframes Islamic environmental thought as a living theology of material relations.

Such a perspective offers both a critique and an expansion of modern Islamic environmentalism, which often remains confined to moral exhortation or policy discourse. The material ecology of *turats* reveals that ecological consciousness in Islam has always been embedded within the material care for sacred things. Recognizing the agency of these materials invites a new theological imagination, one that sanctifies the very processes of ecological transformation as manifestations of divine creativity.

## 3.2 *Socio-ecological profile of pesantren and the production of sacred waste*

Islamic boarding schools (*pesantren*) in Indonesia function not only as religious educational institutions but also as complex socio-ecological systems. Within them unfold the processes of value reproduction, knowledge transmission, and material activity that leave discernible ecological footprints. In this context, the management of sacred waste—particularly worn-out *mushaf* (Qurʾanic manuscripts) and *kitab kuning* (classical Islamic texts)—reflects the intricate relationship between the sanctity of scripture and the community's ecological responsibility. Fieldwork conducted in three major Jakarta pesantren—Asshiddiqiyah, Darunnajah, and Darurrahman—reveals that educational

activities, student population, and institutional structures directly influence the volume and pattern of sacred waste production.

Established in 1985 under the leadership of Kiai Noer Muhammad Iskandar, Asshiddiqiyah Boarding School accommodates around one thousand students across multiple educational levels (Ubaidillah, 2025). As an urban pesantren with twelve branches, it offers a comprehensive model of Islamic education that integrates classical scholarship with community engagement. Yet behind this institutional success lies an emerging ecological problem, an alarming increase in the number of damaged or unusable mushaf and religious books. Observations indicate that the pesantren generates approximately 9,256 unusable mushaf and *kitab kuning* annually (Anwar, 2025). About 30 percent of these are donated to other institutions, while the remaining 70 percent are disposed of through open burning within the pesantren compound. This method, though considered permissible under Islamic jurisprudence, poses severe ecological risks (Anwar, 2025). Pollutants from combustion, such as carbon monoxide and fine particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>)—can endanger students' respiratory health and degrade air quality (Cheng et al., 2020; Organization, 2025; Wang et al., 2023). Socio-ecologically, such practices exemplify a tension between ritual piety and ecological unawareness.

A key aggravating factor is the students' limited awareness of the sacred value of their learning materials. Many mushaf and *kitab kuning* are left behind in mosques, classrooms, or canteens until they become damaged. Although the pesantren has imposed fines on students who abandon their books, this policy paradoxically increases the number of neglected volumes, as students prefer purchasing new ones instead of reclaiming the old (Anwar, 2025). Consequently, mosque storage rooms often accumulate deteriorated texts that are eventually burned. In socio-ecological terms, punitive policies without ecological education merely intensify the waste burden and accelerate environmental degradation (Anwar, 2025).

A similar pattern is observed at Darunnajah Boarding School, founded in 1942 by Kiai Syukron Makmun. Hosting approximately 1,650 students and following the Gontor-inspired curriculum, this pesantren produces a larger amount of sacred waste than Asshiddiqiyah. Estimates indicate that Darunnajah generates around 28,392 damaged mushaf and books each year, primarily originating from two sources: textbooks used in Madrasah Diniyah classes and Qur'anic manuscripts used for memorization exercises (Fathir, 2025). Weekly, among its 78 classes, an average of three books per class become damaged, in addition to four Qur'anic copies due to student negligence. The high rate of sacred waste production demonstrates a strong correlation between the intensity of classical text study and the rate of material degradation (Fathir, 2025).

Approximately 45 percent of damaged books at Darunnajah are kept in a special library that serves as a "religious recycling" space, allowing other students to reuse them. However, the remaining 55 percent are still incinerated. While the practice is religiously sanctioned, it reveals a paradox between symbolic reverence for the sacred text and ecological indifference (Fathir, 2025). The open burning also reflects structural limitations in adopting safer disposal technologies. Socio-ecologically, Darunnajah illustrates the dilemma faced by large religious institutions caught between ritual orthodoxy and ecological adaptation.

In contrast, Darurrahman Boarding School, founded in 1975 and accommodating around 2,100 students, records the highest level of sacred waste production among the three. Each year, it produces approximately 45,640 pieces of sacred waste, including 29,000 *kitab kuning* and 16,640 Qur'anic manuscripts. The high volume is driven by its intensive turats-based learning system, with more than 80 madrasah diniyah classes held weekly (Ilman, 2025). Most damaged materials result from intensive use, damp storage conditions, and student negligence. Around 70 percent of the waste is stored in warehouses, while 30 percent is burned (Ilman, 2025). However, large-scale book storage in damp spaces creates new health risks, such as mold and bacterial growth that may cause respiratory infections among students.

From a socio-ecological standpoint, the Darurrahman case highlights two key dynamics. First, the high intensity of classical text study inherently generates a continuous

cycle of sacred waste within the educational mechanism. Second, the reliance on traditional burning methods reflects the absence of ecotheological integration in pesantren governance. Although the pesantren has attempted innovations, such as printing more durable books using its own press, these remain long-term preventive measures that do not address the existing accumulation of sacred waste.

Collectively, the three pesantren represent a broader ecological portrait of Islamic boarding schools in Indonesia: religious communities deeply committed to the sanctity of scripture but lacking ecological awareness. The social patterns underpinning sacred waste production are not merely technical but also cultural, rooted in religious conceptions of burning as an act of purification. Anthropologically, this can be understood as a “rite of passage” from the profane to the sacred (Turner, 1969). In Islamic tradition, burning worn-out religious texts is often regarded as an expression of reverence rather than an environmentally harmful act.

However, from an Islamic ecotheological perspective, such views require reinterpretation so that religious practices align with principles of environmental sustainability. Seyyed Hossein Nasr (Nasr, 1996) argues that the modern ecological crisis stems from a spiritual crisis that severs nature from divine sanctity; hence, every religious act must be framed within a cosmological awareness that nature is a manifestation of God’s signs (*āyāt Allāh*). Within this framework, burning *mushaf* or *kitab kuning* should not merely be seen as an act of reverence, but also as an ethical responsibility to safeguard God’s creation from unnecessary harm.

Conceptually, pesantren have immense potential to become centers for Islamic ecotheological education due to their value-based curricula and communal obedience to the moral authority of the kiai. Abdurrahman Wahid (Wahid, 1987) described pesantren as flexible cultural institutions capable of engaging with contemporary social issues without losing their religious identity. Within this framework, pesantren can evolve into “laboratories of ecological ethics,” cultivating environmental awareness as an extension of *‘amal ṣāliḥ* (righteous action).

Nonetheless, this potential remains under-realized due to the lack of epistemological integration among fiqh regulations, institutional policy, and ecological consciousness. (Ozdemir, 2003) asserts that environmental stewardship in Islam is not merely a moral duty but a dimension of humanity’s *khilāfah* (vicegerency) that requires both spiritual awareness and practical governance. The absence of dialogue between fiqh and environmental ethics has caused many Islamic educational institutions, including pesantren, to operate within a dichotomous framework separating textual sanctity from ecological reality.

Table 1. Comparative socio-ecological profile and sacred waste management in three pesantren

| Islamic boarding school<br>(pesantren) | Students | Annual sacred waste | Management pattern                   | Main ecological implication                                        |
|----------------------------------------|----------|---------------------|--------------------------------------|--------------------------------------------------------------------|
| Asshiddiqiyah                          | ≈1,000   | 9,256 items         | 30% donated; 70% open burned         | Open-burning emissions (CO, PM <sub>2.5</sub> , PM <sub>10</sub> ) |
| Darunnajah                             | ≈1,650   | 28,392 items        | 45% retained/reused; 55% incinerated | Open-burning emissions; limited safer-disposal infrastructure      |
| Darurrahman                            | ≈2,100   | 45,640 items        | 70% stored; 30% burned               | Mold/bacterial risk from damp storage; burning emissions           |

In summary, the socio-ecological profiles of the three pesantren reveal an intricate interplay among demographic factors, educational structures, student behavior, and religious values shaping the patterns of sacred waste production. The higher the intensity of textual study and the larger the student body, the greater the volume of sacred waste generated. This finding aligns with Bryant & Bailey’s (1997) observation that the ecological behavior of religious communities is often influenced by the interaction between social

structures and theological perceptions of nature. Without an ecotheological framework guiding waste management, pesantren will continue to produce sacred waste at large scales, posing not only sanitation and health problems but also a theological paradox between reverence for sacred texts and neglect of God's creation in the form of the environment. As Tucker (2003) suggests, this contradiction can only be resolved through spiritual renewal and religiously grounded ecological education.

### 3.3 Patterns of management and destruction practices: Between *fiqh* and ecology

The management and disposal practices of sacred waste in the three pesantren examined reveal a complex relationship between adherence to Islamic jurisprudence (*fiqh*) and an emerging ecological consciousness. In this context, sacred waste comprising mushafs, *kitab kuning*, and other religious texts, is not regarded as ordinary refuse but as material endowed with spiritual and symbolic dimensions. Their handling must therefore be carried out with utmost care, as it concerns reverence for the words of God and the intellectual legacy of the ulama. Yet, in practice, various adaptive strategies emerge, demonstrating how pesantren reinterpret *fiqh* principles in alignment with modern ecological responsibility.

Based on field observations and interviews with caretakers and library managers, three dominant patterns of sacred waste management were identified: long-term storage, symbolic burial, and ritual burning. Each reflects distinct theological reasoning but shares a common objective, to preserve the sanctity of the sacred text. The first pattern, long-term storage, involves stacking worn mushafs or old books in a designated space known as *makhzan al-kutub al-qadimah* usually in a library corner or cement-floored storeroom with low humidity (Fathir, 2025). The intent is to prevent desecration of the texts, though this often leads to significant paper accumulation. Ecologically, this practice is unsustainable, as sealed storage areas attract termites and mold, posing potential health hazards.

The second pattern, symbolic burial, entails interring damaged manuscripts in a designated section of the pesantren grounds. Some kiai associate this method with classical Islamic traditions of burying worn mushafs. From a *fiqh* perspective, this practice is grounded in the principle of *ta'zhīm al-nuṣūṣ* (veneration of sacred texts), as discussed by scholars such as Ibn Najim in *Al-Baḥr al-Rāiq* (Najim, 2020). However, amid Jakarta's rapid urbanization, open land for such burials is increasingly scarce. As a result, some pesantren perform symbolic burials by digging small pits to inter only the most damaged portions, while the rest are incinerated. From an ecological standpoint, this method is comparatively more sustainable, as it returns the paper material to the soil, although caution is needed to prevent groundwater contamination from chemical inks.

The third method, ritual burning, is the most prevalent yet also the most controversial. Within *fiqh* tradition, burning mushafs is permitted if done with the intention of preserving the sanctity of sacred texts such as Qur'anic verses, Prophetic traditions, and Islamic teachings. This practice traces back to Caliph 'Uthmān ibn 'Affān's decision to burn variant mushafs to maintain textual unity (al-Haitami, 2001). In the modern urban context, however, open burning introduces new ecological challenges, particularly air pollution.

Analysis of ritual burning practices reveals an epistemic tension between *fiqh* legitimacy and contemporary ecological ethics. Historically, the sanction for burning mushafs was grounded in *ta'zhīm al-Qur'ān*, preserving the Qur'an's sanctity from profanation (al-Haitami, 2001). Yet, within the framework of environmental ethics, such actions create a moral dilemma: how to honor divine revelation without harming God's creation? (Nasr, 1996) reminds that the sanctity of the text is inseparable from the sanctity of the cosmos; both are manifestations of a single divine reality. Consequently, burning that emits carbon undermines the spirit of ecological *tawḥīd*, which envisions the interconnectedness of humanity, text, and nature. This critique resonates with Latour (2004) notion of the "modern constitution," which artificially separates nature and culture, a dichotomy that has infiltrated religious practice when ritual piety is divorced from ecological piety. In the urban pesantren context, ritual burning without filtration systems

results in both micro-pollution and what Douglas (1966) calls “symbolic pollution,” reflecting the paradox between the intention to purify texts and the act of contaminating the air. Thus, fiqh reinterpretation is necessary so that the principle of *ta’zhīm* can align with *maqāṣid al-sharī’ah*, particularly *hifẓ al-bī’ah* (environmental preservation), which has emerged as a new imperative in contemporary Islamic jurisprudence (Kamali, 2017).

Furthermore, the findings indicate that pesantren’s ecological practices remain largely responsive rather than transformative, driven by pragmatic necessity rather than systemic ethical awareness. Here, an eco-theological discourse analysis becomes crucial to reinterpret fiqh discourse through the lens of environmental ethics. As Ozdemir (2003) asserts, the ecological crisis is not merely a policy issue but a spiritual crisis that requires a reconstruction of Islamic epistemology. Pesantren, with their epistemic authority, possess the potential to generate new interpretations of *‘ibādah al-bī’ah*, a devotion through environmental care by linking the sanctity of the text to the sanctity of the earth as *āyāt kauniyyah*. Within this framework, the “Green Fiqh” proposed by Kamali (2017) serves as a point of departure to shift the normative paradigm from *fiqh al-nuṣūṣ* to *fiqh al-wāqī’*, a jurisprudence responsive to ecological realities. Hence, pesantren can evolve beyond traditional textual stewardship to model a form of ecological piety rooted in *turats*, relevant to the global environmental crisis.

### 3.4 Sociocultural factors and religious consciousness of santri in the production of sacred waste

The production of sacred waste in Islamic boarding schools (*pesantren*) is not merely a material or ecological issue but a complex manifestation of layered social dynamics, epistemic structures, and varying degrees of religious consciousness. Sacred waste encompassing Qur’anic manuscripts, *kitab kuning* (classical Islamic texts), and other instructional materials, emerges from the dialectical relationship between *pesantren*’s social norms, traditional educational systems, and the inherited religious ethos passed down through generations. A sociological approach to this phenomenon reveals that the management of sacred texts within pesantren constitutes a social construction rooted in the values of reverence for knowledge (*ta’zhīm al-‘ilm*) and decorum toward texts, which Azra (2019) identifies as part of the santri epistemic tradition that positions the text as both a symbol of sanctity and moral authority.

However, such symbolic reverence often clashes with material and ecological realities. Urban pesantren in Jakarta, such as Asshiddiqiyah, Darunnajah, and Darurrahman, illustrate how collective educational systems grounded in social solidarity paradoxically generate ecological contradictions. Books are used collectively without adequate preservation systems, leading to the deterioration of many mushafs and classical manuscripts. This communal use, emphasizing the principles of consultation and togetherness Bruinessen (1995), reinforces *pesantren*’s social ethos but simultaneously diminishes individual ownership and ecological responsibility. This phenomenon echoes Bourdieu’s (1990) notion of institutional habitus, wherein everyday practices in religious communities often result from the internalization of social structures that operate unconsciously, including those governing the treatment of sacred materials.

Internal regulations across pesantren also reveal varying levels of ecological awareness. At Darunnajah, for example, students are fined for leaving books in mosques or classrooms as a form of social control that frequently proves counterproductive. Many students prefer purchasing new mushafs rather than reclaiming old ones, resulting in the accumulation of sacred waste. Conversely, Darurrahman adopts a reuse system, displaying damaged yet usable books for redistribution among students. This initiative exemplifies Mahmood’s (2005) concept of agentive religiosity, reflecting the ability of religious communities to negotiate traditional doctrines with contemporary ecological awareness without abandoning theological integrity.

Intergenerational dynamics also play a significant role in the production of sacred waste. Senior students who have internalized scholarly decorum demonstrate higher levels

of care for sacred texts, whereas newcomers often treat them merely as functional learning tools. This generational shift signifies a form of cultural lag in the transmission of religious values within pesantren Inglehart (2018), where spiritual consciousness does not necessarily translate into ecological responsibility. In many cases, younger students regard books solely as academic tools rather than as sacred objects worthy of respect. This underscores the need for curricular revitalization through eco-theological literacy, integrating *tawhīd* (divine unity), scholarly ethics, and ecological responsibility into a coherent epistemic framework.

Beyond social and institutional factors, the theological dimension remains equally crucial. *Santri*'s religious awareness of textual sanctity does not automatically translate into ecological behavior. Many students recognize the spiritual value of the mushaf but fail to embody this awareness in practice. This dissonance between knowledge and praxis resonates with Weber's (1978) theory of ritual rationalization, where religious acts often prioritize formal symbolism over substantive moral and ecological reflection. Some pesantren have begun addressing this dissonance through Islamic environmental education initiatives, such as Qur'anic recycling programs and discussions on *fiqh al-bi'ah* (Islamic environmental jurisprudence). Such efforts affirm Nasr's (1996) call for reviving the cosmological consciousness of Islam, recognizing nature and sacred texts as parallel manifestations of divine revelation (*āyāt Allāh*).

Overall, the production of sacred waste in pesantren reflects the dynamic interaction between social habitus, religious value systems, and ecological awareness. Without conceptual integration between turats (Islamic scholarly heritage), ecological ethics, and character education, pesantren will continue to face a paradox between the reverence for sacred texts and environmental neglect. Therefore, reconstructing pesantren education through an Islamic eco-theological framework is both urgent and strategic for positioning pesantren as eco-religious communities in Indonesia, religious institutions that not only safeguard textual sanctity but also honor divine creation through sustainable ecological practice.

### 3.5 Institutional challenges and policy vacuum in sacred waste governance

Institutional challenges in the management of sacred waste within pesantren reveal a deep epistemic tension between religious authority and modern environmental governance. Structurally, pesantren possess strong organizational hierarchies yet lack institutional mechanisms to systematically regulate the handling of worn-out *mushafs*, *kitab kuning*, and other religious materials. Observations at three major urban pesantren—Asshiddiqiyah, Darunnajah, and Darurrahman, demonstrate that sacred waste management policies remain largely personal, relying on the discretion of kiai (clerics) or administrators. This condition aligns with Ostrom's (1990) argument that institutions without formal regulation tend to produce a governance gap, a discrepancy between social norms and practical management mechanisms.

The absence of standardized operating procedures (SOPs) underscores the fragility of ecological institutionalism within pesantren. At Asshiddiqiyah, for example, the collection and disposal of mushafs are handled ad hoc by mosque caretakers, without clear guidelines on frequency or environmentally safe methods. Although burning is performed with the intent of honoring sacred texts in line with classical *fiqh* (al-Haitami, 2001), the practice generates air pollution and chemical residue from printing inks. From the perspective of ecological modernization theory (Mol & Spaargaren, 2000), such practices reveal the incomplete integration of ecological awareness within pesantren's institutional logic, where religious practices still operate under a normative framework detached from environmental considerations.

Institutional issues are further exacerbated by limited storage capacity and inadequate infrastructure. At Darunnajah, library spaces designated for storing damaged manuscripts are insufficient to accommodate the growing volume of sacred waste produced each year. Once capacity is exceeded, administrators resort to emergency mass burnings, often

conducted with religious intent. From the lens of institutional isomorphism (DiMaggio & Powell, 1983), this behavior reflects *pesantren*'s tendency to reproduce traditional symbolic practices without generating institutional innovation. This reactive pattern reinforces a cycle of unsustainability, as management occurs only during crises rather than through preventive strategy.

The absence of national-level policy further complicates the situation. Currently, no formal regulation explicitly governs the handling of sacred waste in *pesantren*. Indonesian environmental laws, such as Law No. 18/2008 on Waste Management and Government Regulation No. 101/2014 on Hazardous Waste, do not address religious waste as a specific category. Meanwhile, policies from the Ministry of Religious Affairs focus primarily on education and administration, lacking environmental instruments. This creates a regulatory vacuum (Kettunen, 2020), forcing *pesantren* to independently interpret how to balance fiqh-based compliance with ecological responsibility. In densely populated urban contexts like Jakarta, this policy gap has direct consequences for public health and air quality due to open burning practices.

Beyond regulatory deficiencies, socioreligious dynamics further shape institutional performance. The *kiai*, as a moral authority, plays a decisive role in determining internal policies. However, such authority often operates under a framework of charismatic authority (Weber, 1978), centered on personal leadership rather than systemic sustainability. When leadership transitions occur, sacred waste policies are frequently altered or discontinued. Moreover, the low ecological literacy among santri exacerbates implementation gaps. As Nasr (1996) observes, the ecological crisis in modern Muslim societies stems from a spiritual dislocation, which refers the loss of awareness that caring for the environment constitutes an act of worship and an embodiment of *tawhīd*.

The absence of technical capacity compounds these challenges. None of the *pesantren* studied possesses specialized personnel or certified facilities such as environmentally compliant incinerators. Open burning remains the default method due to its perceived conformity with fiqh, despite its ecological drawbacks. From the perspective of environmental governance (Lemos & Agrawal, 2006), this condition highlights the urgent need to establish hybrid institutions that integrate religious, technocratic, and communitarian authorities to achieve effective governance.

Therefore, institutional weaknesses and policy vacuums in sacred waste management are not merely administrative issues but symptoms of an epistemic rift between religious values and sustainability paradigms. A collaborative governance model that synthesizes fiqh norms, ecological principles, and national legal frameworks is imperative. Partnerships between the Ministry of Religious Affairs, the Ministry of Environment and Forestry, and Islamic organizations such as *Nahdlatul Ulama* could serve as an initial step toward developing a national guideline for environmentally responsible sacred waste management. Through such integrative approaches, *pesantren* can actualize their ecological role as centers of Islamic learning that preserve not only the sanctity of the text but also the sanctity of creation itself.

### 3.6 Innovative experiments and the potential for sustainable practices in *pesantren*

In addressing the challenges of sacred waste management, several *pesantren* in Jakarta, such as Asshiddiqiyah, Darunnajah, and Darurrahman, demonstrate emerging dynamics that integrate fiqh-based values with ecological sustainability principles. The awareness that religious texts possess both sacred and ecological materiality has inspired innovative experiments combining *ta'zhīm al-nuṣūṣ* (veneration of sacred texts) with environmental ethics. This approach aligns with Hessel & Rasmussen's (2001) concept of ecological theology, which emphasizes the transformation of theology into concrete ecological praxis. These *pesantren* have begun to reinterpret their religious responsibilities not merely as spiritual obligations but also as ecological mandates requiring adaptive management of textual materials.

One of the most significant innovations involves the independent printing of *kitab* and *mushaf* using more durable, eco-friendly materials. For instance, Darurrahman pesantren has initiated the printing of religious texts on sustainable, long-lasting paper, while Darunnajah has undertaken limited internal reproduction of specific *kitab* for in-house use. Such strategies extend the life cycle of religious books while reducing the production of new waste, in line with the United Nations' Agenda 2030 principle of sustainable consumption and production. From an ecotheological perspective, this shift marks a transition from a reactive to a preventive paradigm, from merely managing waste to preempting its creation. This resonates with Latour (2017) argument in *Facing Gaia* that the ecological crisis demands a redefinition of human responsibility toward the material world, including within religious practice.

Beyond printing innovations, the concept of reuse has been creatively adopted at Darunnajah through the establishment of circulation spaces for still-usable religious texts. Students are encouraged to select pre-owned *kitab* from dedicated shelves and reuse them. This practice not only minimizes waste but also fosters a collective ethos among santri to treat religious texts as living entities requiring care rather than as disposable commodities. In the sociology of religion perspective, such actions represent a shift in the symbolic function of texts, from sacred objects to ethical mediators of ecological awareness (Bennett, 2010). Hence, reuse practices in pesantren constitute not merely practical actions but expressions of moral ecology that weave together spirituality and sustainability.

Several pesantren have also begun experimenting with alternative disposal methods such as shredding or mechanical destruction. These methods enable the shredded paper to be repurposed into recycled or non-sacred educational materials, preserving the sanctity of the text while avoiding air pollution caused by open burning. This reflects harmony between fiqh principles emphasizing reverence for sacred texts and contemporary ecological awareness. In this sense, pesantren practices affirm the eco-Islam theory (Foltz et al., 2003), which posits that environmental sustainability can emerge from reinterpretations of classical Islamic values rather than from secularized ecological ethics.

Another crucial aspect is the active involvement of santri as agents in these ecological experiments. Through internal training and interactive discussions, they are introduced to environmental issues from a religious perspective. Such educational programs nurture faith-based ecological literacy, reinforcing the internalization of *khilāfah fī al-arḍ* as a theological responsibility to protect the earth. As Nasr (1996) emphasizes, authentic Islamic spirituality views the cosmos as a reflection of divine sanctity; thus, ecological practice in pesantren represents a social and institutional manifestation of this metaphysical awareness.

Although still limited in scope, these innovative experiments indicate the substantial potential for developing a model of Sacred Environmental Stewardship—a conceptual framework positioning environmental management as an inherent component of religious devotion. The Jakarta pesantren thus exemplify how Islamic educational institutions can negotiate the relationship between text and context, sacredness and sustainability, tradition and innovation. By integrating eco-friendly printing, reuse practices, mechanical recycling, and participatory education, pesantren may function as ecotheological laboratories that affirm Islamic spirituality as extending beyond individual piety toward collective ecological responsibility.

### 3.7 Ecotheological synthesis: Reconciling textual sacredness and ecological responsibility

An analysis of sacred waste management in three urban Jakarta *pesantren*, Asshiddiqiyah, Darunnajah, and Darurrahman, reveals an epistemic tension between textual sanctity and ecological urgency. The *mushaf* and *kitab kuning* serve not only as educational media but also as material symbols of religiosity representing the human-divine relationship. However, traditional practices such as open burning or long-term accumulation reveal a paradox: the sanctity of the text is preserved while the environment is neglected. This condition exemplifies what White (1967) calls dualistic theology, that

refers to the separation of spirituality and ecological responsibility, which necessitates reconceptualization in the context of modern Islamic education.

The proposed ecotheological approach underscores that sacred waste management is not merely administrative but a moral and spiritual act integrating religious ethics with ecological sustainability. Every act of textual disposal or reuse must be evaluated through two dimensions: fiqh legitimacy and ecological impact. As (Nasr, 1996) argues, the modern ecological crisis stems from the “disenchantment of nature”, which refers to the loss of the sacred view of the cosmos as a divine reflection. Hence, treating sacred texts ecologically restores sanctity not only to scripture but also to the earth as *āyah kauniyyah* as signs of God manifest in nature.

Field findings indicate that pesantren implementing environmental education display higher ecological awareness among santri. Through *kitab* reuse activities and literary circulation systems, students engage directly in faith-based environmentalism (Gardner, 2002), a form of piety manifested through collective ecological action. Here, reverence for sacred texts is understood as part of the responsibility to protect creation, rather than as a purely symbolic ritual. This pattern marks a shift from conservative to performative theology, in which fiqh values are transformed into sustainable ecological practices.

Independent printing initiatives using durable materials at Darurrahman and Darunnajah signify a new orientation toward preventive ecology, avoiding waste generation before it occurs. This innovation reflects Latour's (2017) concept of material responsibility, emphasizing that every human interaction with material objects, including sacred texts, carries moral implications within a broader ecological network. By enhancing the physical durability of religious texts, pesantren not only preserve knowledge transmission but also mitigate environmental degradation, representing a substantive reconciliation between sacredness and sustainability.

Moreover, collaborations between pesantren and external institutions such as green printing industries and environmental organizations illustrate the potential integration of circular economy principles within the framework of Islamic ecotheology. The mechanical shredding and recycling of damaged kitab into non-sacred materials create a novel model of waste management that upholds religious reverence while ensuring ecological continuity. This model expands the practical scope of fiqh through ecological adaptation, demonstrating that textual sanctity can be ethically recontextualized in material form.

Theoretically, this research contributes to the formulation of the Sacred Environmental Stewardship Theory (SEST), which conceptualizes sacred waste management as an integral aspect of socio-ecological worship. SEST posits that piety is measured not only by ritual compliance but also by collective capacity to sustain God's creation. As Foltz, Denny, and Baharuddin (Ozdemir, 2003) assert, eco-Islamic ethics rests on the principle of *tawḥīd* (divine unity), which demands the moral, spiritual, and ecological integration of human action. Within the pesantren context, SEST offers a framework linking *ta'zhīm al-nuṣūṣ* (textual reverence) with *'imārat al-arḍ* (earth's cultivation).

This ecotheological synthesis repositions pesantren as dialectical arenas where doctrine and praxis, *turats* and innovation, converge. The growing ecological consciousness within these institutions demonstrates that sustainability can emerge organically from religious values without mimicking Western secular paradigms. Urban pesantren in Jakarta thus serve not merely as custodians of Islamic textual heritage but as social laboratories for the transformation of contemporary Islamic ecotheology, a reconciliation bridging textual sacredness and ecological responsibility within modern religious education.

The paradox between reverence and ecological neglect identified in pesantren practices exemplifies the broader epistemological disjunction within Islamic ecotheology between the symbolic theology of divine signs and the material theology of sacred objects. By reimagining *turats* as ecological matter, this study bridges this disjunction, offering a model of Material Ecotheology that situates the sacred within the circulation of earthly life.

## 4. Conclusions

This study concludes that Islamic ecotheology requires an epistemological reconstruction that transcends theological symbolism to acknowledge the religious materiality shaping the ecosystem. The paradox of sacred waste reveals that sanctity bears both theological and ecological dimensions; every religious act, including the destruction of sacred texts, entails material consequences for environmental sustainability. Hence, Islamic ecological ethics must evolve beyond moral reflection toward ecological praxis that governs how sacredness is materially enacted in human-matter-nature relations. Such reconstruction calls for a renewed understanding of *barakah* and *ta'zhīm* not merely as symbolic reverence but as ecological responsibility woven into the ontology of faith itself. Theoretically, this research challenges the dichotomy between symbolic and material ecotheology by proposing the Material Ecotheology of *Turats* framework, which integrates both dimensions. In this framework, *turats* is not merely a normative text but an ecological entity possessing a life cycle, residue, and physical impact. Emphasizing material ecology opens pathways for a new epistemology that positions sacred artifacts as ecological actants within the web of life. This conceptual shift contributes to the broader environmental humanities by repositioning Islamic theology within materialist ontologies of care and interdependence. It expands the scope of Islamic ecotheological studies by accounting for the “ecological footprint” of sanctity, making religion not only a source of values but also an ecological agent responsible for planetary continuity.

Empirically, findings from the three urban pesantren show that the paradox between textual reverence and environmental degradation arises not from ecological ignorance but from the lack of epistemic integration among *fiqh* law, institutional policy, and ecotheological awareness. Within this context, pesantren hold transformative potential as theological laboratories linking *ta'zhīm al-nuṣūṣ* (veneration of sacred texts) with *ḥifẓ al-bī'ah* (environmental preservation) as a new *maqāṣid* of contemporary *fiqh*. Such recontextualization revitalizes *turats* as a source of ecological wisdom and reaffirms that true Islamic piety encompasses devotion to God alongside responsibility toward the earth. The findings thus urge a theological shift from the sanctification of texts to the sanctification of ecological continuity. Consequently, the Material Ecotheology of *Turats* offers a post-anthropocentric paradigm uniting sacredness and sustainability as two inseparable dimensions of a cosmotheological consciousness.

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## Author Contribution

As the sole author of this manuscript, Muhamad Abror was responsible for all aspects of the research, including conceptualization, methodology, data collection, formal analysis, investigation, writing of the original draft, review and editing, and final approval of the submitted version.

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The data supporting the findings of this study are available from the author upon reasonable request. The data are not publicly available due to privacy considerations related to the informants and the institutions involved.

## Conflicts of Interest

The authors declare no conflict of interest.

## Declaration of Generative AI Use

The author declares that no generative artificial intelligence (AI) tools were used in the preparation, writing, or analysis of this manuscript

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