

Sustainable Practice of *Ogoh-ogoh*: An Ecological Perspective on Integrating Environmental Conservation with Cultural Heritage

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ABSTRACT

The processes of crafting, parading, and burning the Ogoh-ogoh carry spiritual significance for Hindu communities in Indonesia. Despite its deep spiritual and philosophical meaning, the Ogoh-ogoh celebration is not without controversy. Environmental critics have raised concerns regarding the materials used in Ogoh-ogoh construction, including paints and dyes, as well as the environmental impact of the burning process. The objective of this study is to describe the cultural practices of Ogoh-ogoh in Surabaya and Gresik, particularly in relation to cultural preservation and environmental conservation. The research employs a Descriptive Qualitative Method. Content Analysis will be used to interpret the data. The research locations are Pura Perak in Surabaya and Kampung Bongso Wetan in Gresik. The subjects of this study include Hindu religious leaders, Ogoh-Ogoh artisans, and environmental enthusiast communities. Data were collected through literary studies, participatory observation, and in-depth interviews. The steps of data analysis are: 1) examining literature, policy documents, and archival materials, 2) conducting open coding, 3) categorizing codes, 4) applying selective coding, 5) interpreting data from observation and interview, 6) integrating data from cultural to ecological points of view, and 7) drawing conclusions. Findings reveal that local communities are actively integrating biodegradable and non-biodegradable materials to create Ogoh-ogoh. Styrofoam, plastic raffiah, and metal wires are continuously used due to their affordability, accessibility, and malleability. This research offers a model for sustainable cultural practice that bridges tradition and innovation, emphasizing the role of community agency in shaping environmentally conscious heritage. It aims to inspire policy frameworks and educational initiatives.

KEYWORDS

Conservation
Culture
Ecology
Environment
Ogoh-ogoh

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INTRODUCTION

The tension between culture and ecology emerges when human traditions, values, and lifestyles intersect with environmental sustainability. Cultural practices often shape how societies use natural resources, from agriculture and rituals to urban development, yet these practices can conflict with ecological balance when consumption exceeds regeneration. Conversely, ecological preservation may challenge cultural norms, requiring communities to adapt or abandon long-held customs. This dynamic creates a complex dialogue between identity and survival, where protecting biodiversity and ecosystems must coexist with respecting cultural heritage, highlighting the urgent need for harmony between human expression and environmental responsibility.

One of the local cultural traditions closely connected to nature and ecosystems is the *Ogoh-ogoh* Festival. This celebration is currently gaining attention both nationally and

internationally, due to its unique combination of ritual, artistry, and creativity among Hindu practitioner. *Ogoh-ogoh* refers to something that is shaken or moved (Suda & Indiani, 2018). For Hindus, *Ogoh-ogoh* represents the figure of *Bhuta Kala*, a giant symbol of malevolent forces. Therefore, *Ogoh-ogoh* must be burned. It is believed that this act eliminates negative energy from the earth (Prianta & Sulistyawati, 2024). The process of crafting, parading, and burning *Ogoh-ogoh* carries profound spiritual meaning for Hindu communities in Indonesia.

Despite its profound spiritual and philosophical significance, the *Ogoh-ogoh* celebration has sparked environmental issues. Environmental enthusiasts have raised ecological concerns regarding the practice, particularly the use of non-organic materials and the environmental impact of the burning process. The production of *Ogoh-ogoh* has undergone significant transformation over time. Initially, its construction relied on organic materials such as bamboo, wood, paper, and leaves. In the present practice, however, non-biodegradable substances, such as: styrofoam, plastic, metal wire, glass, and synthetic paints, have become prevalent (Wiguna, 2025). This transition is primarily driven by the widespread availability, malleability, and economic efficiency of such materials.

Ogoh-ogoh celebration is not exclusively held by Hindu communities in Bali but it is also practiced by Hindu practitioners residing in the regions of Surabaya and Gresik. Geographical differences rise to variations in the implementation of cultural traditions. This phenomenon is evident in the acculturation of the *Ogoh-ogoh* festivities within Surabaya and Gresik. Such variations include the incorporation of local cultural elements specifically Javanese and Madurese traditions into the ritual practices. For instance, Hindu communities in Gresik deliver ceremonial prayers in the Madurese language, while those in Surabaya predominantly use Javanese. Local artisans often design the decorative features of *Ogoh-ogoh* with red and white hues, reflecting the aesthetic influence of Madurese culture. Moreover, the *Ogoh-ogoh* statues crafted in Surabaya and Gresik are generally simpler in form, likely due to financial and material constraints. Nevertheless, this simplicity does not diminish the spiritual significance of the celebration.

Extensive research on cultural practices has been conducted through a variety of methodological approaches. For instance, studies employing a semiotic lens have focused on the symbolic elements embedded within traditional ceremonial practices (Dewanto, 2024, 2022; Winarta, 2018). Investigations into *Ogoh-ogoh* culture have also adopted historical approaches (Suharta, 2019; Sukaesih et al., 2020; Diatmika, 2019; Saphira et al., 2022). Additionally, several scholars have examined *Ogoh-ogoh* through the lens of commodification (Ramadhansyah & Damajanti, 2022; Prianta & Sulistyawati, 2024; Wiguna, 2025). The research highlights how religious rituals may serve as instruments for enhancing community welfare by attracting international tourism through *Ogoh-ogoh* tradition. Other studies have approached *Ogoh-ogoh* from an ecological perspective, such as those by (Putra et al., 2021; Dinanda & Wiryawan, 2020; Ardana & Sudita, 2020; K Ganika & Suardana, 2019; Karsana, 2023) which highlighted the use of natural versus hazardous materials in the construction of *Ogoh-ogoh*.

This study shares a thematic alignment with previous research, particularly in its focus on the materials used in the construction of *Ogoh-ogoh*. However, earlier studies have tended to emphasize the technical and symbolic dimensions of *Ogoh-ogoh* creation, often isolating material choice from broader socio-environmental contexts. In contrast, the present study introduces a fundamental distinction that constitutes its state-of-the-art contribution: namely, the adoption of a cultural ecological approach to the *Ogoh-ogoh* Festival practiced in Surabaya and Gresik. This approach foregrounds the interrelationship between human communities, the natural environment, cultural values, and the sustainability of *Ogoh-ogoh*.

practices. Cultural ecology emphasizes the interrelationship between human beings, the natural environment, and cultural values (Saefullah et al., 2023). This theoretical framework posits that humans, culture, and the environment constitute an integrated system of mutual influence. Within the ecological domain particularly in the context of cultural ecology, culture functions as a central element that reflects how human communities engage with and utilize their environment as part of an adaptive process. Consequently, the expression of local wisdom embedded in cultural ecological practices can be discerned through the influence of belief systems (I. W. M. Putra, 2022).

Based on the aforementioned context, this study aims to describe the cultural practices of *Ogoh-ogoh* celebration conducted in Surabaya and Gresik. This study seeks to provide a comprehensive understanding of how the cultural practice of *Ogoh-ogoh* in Surabaya and Gresik can be sustainably transformed through the use of environmentally friendly materials, and how the local communities of Surabaya and Gresik promote the sustainable transformation of *Ogoh-ogoh* within the context of cultural heritage.

METHOD

This study employs a qualitative descriptive research design. Descriptive qualitative research is a form of inquiry that seeks to explore and interpret the meanings constructed by individuals or groups in relation to specific social phenomena (Wallwey & Kajfez, 2023). Descriptive qualitative research will be operationalized by purposively selecting participants who are directly engaged with the social phenomenon, gathering rich data through methods such as interviews, observations, document analysis, and recording these interactions in detail to capture participants' perspectives. The data will then be analyzed inductively using content analysis to identify recurring patterns of meaning, with credibility ensured through techniques like triangulation and member checking. Finally, findings will be reported in thick, contextualized descriptions supported by participants' own words, so the study remains faithful to the lived experiences being explored. The methodological process begins with the formulation of foundational assumptions, followed by a critical review of relevant theoretical frameworks, and subsequently the articulation of research problems. In addressing the identified issues, this study adopts an ecological perspective, thereby situating its analysis within the interrelations between human behavior, cultural practices, and environmental contexts.

There are two locations chosen for the present study, Pura Perak in Surabaya and Kampung Bongso Wetan in Gresik. The selection of research sites was conducted using a purposive method. Locations were chosen for their high concentration of Hindu practitioners, the presence of temples, *Pura*, within residential areas, and active community engagement in the creation of *Ogoh-ogoh*. The selection of subjects of the present study employed purposive sampling. The subjects included members of the Hindu religious community, *Ogoh-ogoh* artisans, and members of environmental enthusiast groups.

Data for this study were obtained through literature studies, observation, and in-depth interview. The literature studies involved a critical analysis of textual sources related to the *Ogoh-ogoh* tradition, scholarly publications, and environmental regulations. The field research was conducted using three qualitative techniques. First, participatory observation at the research locations. It enabled to witness the community's engagement in the construction and ritual combustion of *Ogoh-ogoh* at the research site. The purpose of the observation was to find out the process of creating *Ogoh-ogoh*, the materials used, and the place where *Ogoh-ogoh* burned. Second, in-depth interviews with members of the Hindu religious community and *Ogoh-ogoh* artisans. Third, Focus Group Discussions (FGDs) with

members of environmental enthusiast groups to elicit collective insights into sustainable cultural practices and ecological conservation embedded within the *Ogoh-ogoh* ritual framework. This triangulated approach ensured a comprehensive understanding of both the symbolic and ecological dimensions of the tradition.

Data analysis was conducted using two complementary qualitative techniques: content analysis and descriptive analysis. Content analysis was employed to systematically examine literature, policy documents, and archival materials related to the cultural dimensions of *Ogoh-ogoh* and their intersection with environmental conservation (Pohontsch, 2019). This technique enabled the researcher to identify recurring themes, symbolic representations embedded within textual sources. In parallel, descriptive analysis was applied to interpret empirical data derived from field observations and interviews. This approach facilitated a nuanced understanding of participants' lived experiences, ritual engagements, and ecological perspectives. It constructed a coherent portrayal of the *Ogoh-ogoh* tradition as both a cultural expression and a site of environmental reflection. Briefly, the steps of data analysis are: 1) examining literature, policy documents, and archival materials, 2) conducting open coding to identify initial concepts, 3) categorizing codes into thematic clusters, 4) applying selective coding to build an analytical framework, 5) interpreting data from observation and interview, 6) integrating data from cultural to ecological points of view, and 7) drawing conclusions.

RESULT AND DISCUSSION

Materials used for creating *Ogoh-ogoh*

The process of creating *Ogoh-ogoh* effigies presents considerable challenges for the artisans involved. It needs a talented professional artisan mostly experiencing in creating *Ogoh-ogoh*. The artisan does not only have ability to calculate the process, the duration, and the cost, but also to decide materials used. It takes a long process to finish one effigies starting from conceptualizing, drafting, framework constructing, sculpting the form, painting, to decorating the effigies. In addition, the artisan must specify materials used based on the functions and religious interpretation as there are certain materials carrying religious symbols and certain meaning for Hindu practitioners. Based on the data from interview and observation, the materials used to create *Ogoh-ogoh* in Pura Bali Surabaya and Kampung Bongso Wetan, Gresik are obtained from local people and natural resources, while some other have to be purchased.

Considering environment consequences, the materials used to construct *Ogoh-ogoh* can be classified into two broad categories, namely biodegradable materials and non-biodegradable materials. Biodegradable materials are materials that can be decompose naturally by microorganism and do not cause long term effect to environment. On the other hand, non-biodegradable materials are materials that cannot be decomposed naturally by microorganism and cause long term impact to environment when they are burned down. Materials used to create *Ogoh-ogoh* in Pura Bali Surabaya and Kampung Bongso Wetan, Gresik are similar to those in other places in Indonesia. The differences are in the areas of size and technology. For instance, the size of *Ogoh-ogoh* in Bali is two or three times bigger than that in Surabaya and Gresik. Moreover, Balinese artisans have apply technology in the process of drafting and constructing *Ogoh-ogoh*. **Table 1** shows materials needed to create *Ogoh-ogoh*.

Table 1. Biodegradable and Non-biodegradable Materials to create *Ogoh-ogoh* Effigies

Biodegradable Materials (BM)	Non-Biodegradable Materials (NBM)
Bamboo	Styrofoam
Wood	Sponge
Fabric/Cloth	Metal wires or rods
Paper	Plastic deg
Straw (stalk of rice)	Paint
Banana stem	Adhesives
Coconut leaves	Plastic raffia

The number of materials needed for an effigy depends on its size. The large effigies naturally require more resources. Traditionally, artisans relied on natural materials sourced from their immediate environment, such as bamboo, wood, and organic fibers, which reflected a cultural logic of ecological reciprocity. This practice symbolized not only technical craftsmanship but also a worldview in which human creativity was inseparable from the rhythms of nature. According to Jero Mangku Ketut Sute (Hindu Religious Leader, September 2025), each material employed in the construction of the ogoh-ogoh embodies symbolic meaning that reinforces the ritual's moral and spiritual dimensions. Paper, representing human skin, is easily combustible and thus signifies bodily vulnerability while underscoring the necessity of self-control and restraint. Similarly, sponge, with its rapid flammability, conveys the impermanence of existence and the inevitability of returning swiftly to one's origin, serving as a metaphor for the transient nature of life and the cyclical process of renewal. However, the scarcity and difficulty of shaping these natural resources have led to the increasing use of synthetic materials such as styrofoam, sponge, plastic, and metal wires. From an ecological perspective, this transition illustrates a shift from adaptive cultural practices rooted in sustainability toward modern expediency that risks ecological imbalance. Culturally, the substitution of natural with artificial materials signals a negotiation between tradition and modernity: while artisans preserve the ritual form of Ogoh-ogoh, the ecological wisdom embedded in material selection becomes diluted. Thus, the present study interprets this material transformation not merely as a technical adjustment but as a cultural-ecological tension, where the sustainability of local wisdom is challenged by the pressures of availability, convenience, and contemporary aesthetics.

Each year, Hindu practitioners in Pura Bali Surabaya produce 3-4 *Ogoh-ogoh*. An artisan, persons with carving skills, and local community are coordinate to design and create *Ogoh-ogoh*. It takes approximately 2-3 months to finish one *Ogoh-ogoh*. The size of each *Ogoh-ogoh* is around 70 kg in weight and more or less 2.5 m tall. Meanwhile, Hindu practitioners in Kampung Bongso Wetan, Gresik produce around 11 *Ogoh-ogoh* in a year. The process of making the *Ogoh-ogoh* takes 2 months. Each figure weights under 100 kilograms and stands almost 2 to 3.5 meters high.

Analytically, this contrast reveals two distinct ecological patterns. The smaller number of Ogoh-ogoh in Surabaya suggests a production model that emphasizes intensive craftsmanship and resource concentration, where fewer effigies are made but with greater investment of time and materials per unit. In ecological terms, this approach minimizes overall material extraction and reduces environmental strain, aligning more closely with sustainable practices. By contrast, the higher output in Gresik reflects a community-driven model of extensive production, where more effigies are created within the same timeframe. Although each effigy is relatively lightweight, the cumulative demand for materials whether

natural or synthetic places greater pressure on local resources and generates more ecological waste.

Thus, the difference in numbers is not merely quantitative but carries ecological implications: Surabaya's limited production demonstrates a balance between cultural expression and environmental stewardship, while Gresik's larger-scale production highlights the tension between communal enthusiasm and ecological sustainability. This comparison underscores how variations in production scale directly influence the ecological footprint of Ogoh-ogoh practices, shaping the sustainability of cultural traditions in different local contexts.



Figure 1. Process of making *Ogoh-Ogoh*

The process of making *Ogoh-ogoh* effigie as in **Figure 1** involves a detailed and multi-step process. There are four big steps involved. The first step is designing a figure, the second step is framing the construction, the third step is body shaping, and the last step is painting and decorating the figure. The body frame of *Ogoh-ogoh* is made of bamboo tied with plastic raffia and metal wires. This frame must be strong yet lightweight to allow carrying during the parade. The body frame is covered with papers, banana stems, styrofoam, and fabric to create volume and structure. Head, hands, and legs are made of styrofoam and sponge. According to the artisans, the head, hands, and legs are the most difficult part to make so that it needs elastic and light materials. They found that styrofoam and sponge are easier to carve and lighter compare to any other materials. Once the figure is shaped, the artisan paints with bright colors and decorating with religious symbols.

The Burning Process of *Ogoh-ogoh* Effigies and The Impact

Ogoh-ogoh are depicted with large bodies, elongated claws and fangs, terrifying facial expressions, and disheveled hair. Within the framework of Hindu Dharma, *Ogoh-ogoh* serves as representations of Bhuta Kala, which embodies the forces of disorder and malevolence. Bhuta Kala functions as a symbolic manifestation of negative entities that must be eradicated in order to restore cosmic balance. In line with the knowledge of eradicating the negative entities from the earth, Hindu practitioners destroy the *Ogo-ogoh* effigies after parade before they are finally burned down (Anggreni, 2023).

In Pura Perak Surabaya and in Kampung Bongso Wetan, Gresik, the process of burning the *Ogoh-ogoh* is held inside the area of *Pura*, a temple for Hindu believer to worship, ritual, and do ceremony. They have a designated place within the *Pura* to do the process of burning. Before burned down, the *Ogoh-ogoh* must be destroyed to make burning process easier and faster. The *Ogoh-ogoh* effigies will be burned at 09.00 p.m. after the parade. The burning of *Ogoh-ogoh* effigies requires the use of gasoline to accelerate the process. It takes 2-3 hours

to finish the process. The flames signify the transformation of negative energies into ash, returning them harmlessly to the earth. The process of burning down the *Ogoh-ogoh* raises critical questions about environmental ethics due to the non-gradable materials used and the impacts. **Figure 2** shows a burning process of *Ogoh-ogoh* in Kampung Bonso Wetan, Gresik.



Figure 2. The burning process of *Ogoh-ogoh*

Concerns have arisen over the use of non-biodegradable materials like styrofoam, plastics, and synthetic sponges. Those materials release harmful toxins when burned. The impact of the burning causes health and environmental issues. Hazardous compounds generated from the combustion of plastics may persist long after visible smoke and odor have disappeared. Moreover, localized community practices of burning mixed plastic waste have been shown to present heightened health risks (Ajay et al., 2022). Exposure from the harmful pollutants of open burning are linked to problems with cancer, the liver, the immune system, endocrine system, the reproductive system, and the developing systems of the young (National Plastic Action Partnership [NPAP], 2020). In addition, the ash from open burning can contain dioxins, heavy metals, and other toxicants, which once settled on the ground, contaminate the soil, groundwater, and thus the organisms surrounding the environment and their respective food chains (Pathak et al., 2023). Open burning of plastic waste is also considered as a source of air pollutants and greenhouse gases (Bardales Cruz et al., 2022). Studies conducted at Imperial College indicate that black carbon released through the open burning of waste contributes a climate impact estimated to be between 2% and 10% of global CO₂-equivalent emissions (Reyna-Bensusan et al., 2019). A non-profit, multi-stakeholder network, The Indonesian Waste Platform (IWP), has mission to advance and accelerate solutions to the global climate and waste crisis. One of its activities is to campaign prohibition of open waste burning as it is displayed on **Figure 3**. The figure shows the adversities of open waste burning particularly plastic to people's health. The organization tries to educate society and accelerate awareness of negative impact of open burning on health and environment.



Figure 3. A campaign poster of Restriction of Plastic Burning in Open Space
 (Source: <https://www.indonesianwaste.org/open-waste-burning-program/>)

Hindu practitioners held Ogoh-ogoh festival every once a year in Indonesia. The festival is begun by ritual parades and culminated by burning down the *Ogoh-ogoh* effigies. As noted earlier, there were four *Ogoh-ogoh* effigies in Pura Perak, Surabaya and eleven *Ogoh-ogoh* effigies varying in weight and size were constructed in Kampung Bongso Wetan, Gresik. The total is fifteen *Ogoh-ogoh* effigies ready to be burned in this two areas. Across Indonesia, however, the number of *Ogoh-ogoh* effigies prepared for combustion on the same night likely reaches into the hundreds. Thus, within a single evening, hundreds of effigies are simultaneously set aflame. The scale of pollutants released into the atmosphere through this practice is difficult to quantify, yet the implications for public health are considerable as large numbers of individuals are placed at risk of exposure. Although the immediate consequences may not be readily perceived, it is essential to acknowledge the potential long-term effects. The accumulation of pollutants and toxic emissions over time can significantly compromise air quality, disrupt ecological systems, and pose enduring risks to human health. Such impacts often manifest gradually, making them less visible in the short term but more severe in the long run. Khoirul Anam, an environmental activist, explained that “in general, the burning of ogoh-ogoh does not have a significant impact on the health of flora and fauna around the site. However, there are solutions to reduce smoke pollution from the burning process, such as planting vegetation that can absorb air pollutants, including *Sansevieria* commonly known as sword plants or mother-in-law’s tongue” (personal communication, October 2025).

The mass ritual burning, while deeply symbolic of the eradication of negative forces (Bhuta Kala), also raises significant ecological concerns. The widespread use of non-biodegradable materials such as styrofoam and synthetic paints in the construction of *Ogoh-ogoh* effigies contributes to toxic emissions when burned, including carbon monoxide, styrene gas, and other hazardous compounds. Consequently, the festival embodies a paradox. It serves as a spiritual purification for the community, yet simultaneously generates environmental pollution that threatens public health and ecological sustainability.

Transformation of *Ogoh-ogoh* and Environmental Conservation

Based on the data taken from observation and interview with members of the Hindu religious community, *Ogoh-ogoh* production in Surabaya and Gresik uses combination between biodegradable and non-biodegradable materials. For instance, they use plastic raffia and metal wires to replace bamboo fibers to fasten the *Ogoh-ogoh*'s framework, styrofoam to replace papers to cover body, and so on. The continued reliance on non-biodegradable components remains unavoidable due to modernization, aesthetic competition, accessible, and easily to be form. In addition, the non-biodegradable materials become increasingly scarce and their cost continuously rises. Environmental problems will persist and are likely to intensify in the absence of effective policies or solutions to address them. Transformation of *Ogoh-ogoh* as a ritual ceremony into environmental conservation is urgently required today, as it not only sustains cultural heritage but also provides a strategic response to ecological problems. A transformational model can be described as a cycle of transformation between a ritual ceremony and environmental conservation as in **Figure 4**.

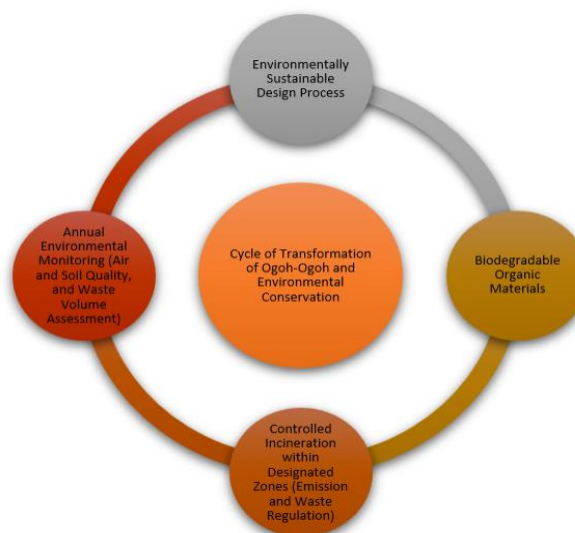


Figure 4. Cycle of Transformation of *Ogoh-Ogoh* and Environmental Conservation

The first transformational model is the awareness of using biodegradable organic materials. Society needs a sense of belonging to where they live. It is necessary to build material consciousness. Material consciousness refers to an elevated awareness of the substances that compose the physical environment, with particular attention to their sources, modes of processing, applications, and ultimate disposal. It underscores the recognition of how material choices are intrinsically linked to wider ecological and social consequences (Utami et al., 2024). In di Desa Adat Sidakarya, Kecamatan Denpasar Selatan Bali, a community service has socialized natural materials for making *Ogoh-ogoh* rather than using styrofoam by using animation video (D. Putra et al., 2021). Communities across Bali, particularly youth organizations (sekaa teruna), have initiated a return to eco-friendly craftsmanship. Inspired by ancestral techniques and contemporary environmental awareness, these groups now construct *Ogoh-ogoh* using recycled paper, coconut husks, natural dyes, and repurposed waste (Widyasari, 2025). In Gresik, for instance, the 2025 parade featured effigies made entirely from biodegradable materials, with themes explicitly tied to environmental stewardship. One notable creation, *Amuk Sang Wananing Bhuta Raja*, depicted a giant elephant-faced demon crafted from organic textures, symbolizing both

ecological power and vulnerability. This shift in materiality is not merely technical it is symbolic. It transforms the act of creation into a ritual of healing, where each component carries ethical weight and spiritual intention.

The second transformational model involves the establishment of designated zones. In light of the detrimental impacts of open burning, collaboration between local government and Hindu communities is essential in designing controlled areas specifically intended for the burning of *Ogoh-ogoh* effigies. Although such effigies are traditionally burned within the *Pura*, such as Pura Perak in Surabaya and Kampung Bongso Wetan in Gresik, the resulting residues and pollutants including smoke, ash, and dust continue to disperse into the surrounding air and soil. This practice not only contributes to localized environmental degradation but also poses broader public health risks (Hasanuddin & Herdianto, 2023). By implementing designated burning zones equipped with environmentally responsive technologies, such as air filtration systems or ash containment facilities, the ritual can be preserved while mitigating its ecological footprint. Furthermore, environmental advocates suggest that the strategic planting of specific tree species, including *sansevieria*, in the vicinity of burning sites can serve as a natural mechanism for reducing pollution. These plants are recognized for their capacity to absorb carbon dioxide, filter airborne toxins, and improve overall air quality. By integrating vegetation into ritual zones the community not only mitigates the immediate impacts of smoke and dust but also fosters a greener landscape that symbolizes harmony between cultural practice and ecological responsibility.

The third transformational model centers on the implementation of an Annual Environmental Monitoring System. The negative consequences of air pollution demand intensified efforts for its management, requiring active collaboration between governmental institutions and society at large. A key strategy in this regard is ensuring public access to reliable air quality information, which is facilitated by the government through the Air Pollution Standard Index (ISPU) and monitored via Air Quality Monitoring Stations (AQMS) (Hasanuddin & Herdianto, 2023). The World Health Organization (WHO) reports that air pollution accounts for nearly seven million deaths globally each year, with nine out of ten individuals currently exposed to air that surpasses established safety thresholds (Eric Koons, 2025). Monitoring system framework emphasizes the systematic observation, documentation, and evaluation of ecological impacts associated with ritual practices, particularly the burning of *Ogoh-ogoh* effigies. By conducting yearly assessments, both local authorities and Hindu communities can generate reliable data on air quality, soil conditions, and waste management outcomes. Such monitoring not only provides evidence-based insights for policy formulation but also strengthens accountability and transparency in cultural-environmental governance. Moreover, the system can serve as an educational tool, raising public awareness about the long-term consequences of ritual activities while encouraging adaptive strategies that align tradition with sustainability. In this way, the Annual Environmental Monitoring System becomes a bridge between cultural continuity and ecological responsibility, ensuring that sacred practices evolve in harmony with contemporary environmental imperatives.

The Roles of Government and Local Community for Sustaining the Local Culture and Environmental Conservation

The findings show that this model draws strength from community practices observed in Surabaya and Gresik. Local artisans and youth groups have begun experimenting with eco-friendly materials such as recycled paper, bamboo, and natural dyes in *Ogoh-ogoh* construction, reducing reliance on plastics and chemical paints. Interviews with participants

revealed that these innovations are not only cost-effective but also perceived as acts of stewardship, aligning ritual creativity with environmental responsibility. Observations during the festival showed that audiences responded positively to Ogoh-ogoh designs that incorporated ecological themes, interpreting them as both artistic spectacle and moral reminder. This grassroots adaptation illustrates what scholars call “ritual resilience” the capacity of sacred practices to evolve without losing their essence. It also demonstrates how Ogoh-ogoh functions as a medium for climate education, reaching diverse audiences through lived practice, storytelling, and collective performance.

The Environmental Agency, *Dinas Lingkungan Hidup (DLH)*, is obliged to carry out supervision and control of the environment in order to realize a Surabaya and Gresik free from environmental destruction and pollution. The Environmental Agency has the principal duties and functions of implementing environmental control and monitoring, mitigating environmental impacts, and undertaking environmental restoration (Syaputri, 2017). The Environmental Agency encourage the use of biodegradable materials and regulate the burning of Ogoh-ogoh effigies. This mitigate the environmental impact of the ritual, aligning spiritual purification with ecological responsibility. Furthermore, local governments in Surabaya and Gresik can provide financial subsidies, regulatory frameworks, and educational outreach in order to safeguard *Ogoh-ogoh* as intangible cultural heritage. This support has been conducted in Bali. Local authorities in Bali have supported *Ogoh-ogoh* parades through funding competitions, promoting eco-friendly construction, and integrating cultural education into school curricula (Nanda Anggraini, 2023). These initiatives ensure that the tradition remains vibrant while adapting to contemporary ethical standards.

Local communities are important in sustaining the *Ogoh-ogoh* tradition. Their role extends beyond construction and performance to include cultural transmission, ecological innovation, and social harmony. In Surabaya and Gresik, community led *Ogoh-ogoh* initiatives have become platforms for interfaith dialogue, environmental education, and artistic collaboration. These grassroots efforts reflect a deep commitment to cultural resilience, where tradition is not static but dynamically reinterpreted through collective creativity and ethical reflection. By choosing sustainable materials, organizing clean-up campaigns, and embedding ecological themes into effigy design, communities transform the ritual into a site of environmental pedagogy. The effigy becomes not only a symbol of spiritual purification but also a mirror of ecological consciousness.

The relationship between government and community must be one of mutual reinforcement. Top-down policies alone cannot sustain cultural heritage without grassroots participation, and local efforts require institutional support to scale and endure. This synergy affirms the Hindu principle of *Tri Hita Karana* harmony between humans, nature, and the divine by ensuring that cultural practices honor both ancestral wisdom and planetary ethics (Adhitama, 2020). The *Ogoh-ogoh*, in this context, becomes a sacred medium through which governance, community, and ecology converge. It teaches that sustainability is not merely technical but spiritual; not only about materials but about meaning. As Hindu society in Surabaya and Gresik navigates the complexities of climate change, cultural commodification, and spiritual renewal, the roles of government and community must remain intertwined, adaptive, and ethically grounded. Together, they can ensure that *Ogoh-ogoh* continues to dance not only in the streets, but in the hearts of those who seek balance between tradition and transformation.

CONCLUSIONS

Hindu practitioners celebrate *Ogoh-ogoh* festival every year. The celebration are conducted by making *Ogoh-ogoh* effigies. *Ogoh-ogoh* production in Pura Perak Surabaya and Kampung Bongso Wetan Gresik use combination of biodegradable materials and non-biodegradable materials. Biodegradable materials taken are almost difficult to afford as they are scarcely to afford. Non-biodegradable materials such as: Styrofoam, plastic raffiah, and metal wires are continuously used due to their affordability, accessibility, and malleability. The study revealed that the local community and Hindu practitioners in Pura Perak Surabaya and Kampung Bongso Wetan Gresik have yet to develop material consciousness regarding the use of non-biodegradable substances in the construction of *Ogoh-ogoh*. Moreover, they appear to lack environmental awareness of both the immediate and long-term consequences associated with open burning practices.

This research offers a model for sustainable cultural practice that bridges *Ogoh-ogoh* tradition and innovation, emphasizing the role of community agency in shaping environmentally conscious heritage. The model is a cycle of transformation between a ritual ceremony and environmental conservation. The transformational model are: Cultivating awareness of using biodegradable organic materials, Establishing designated zones for burning, and Implementing of an annual environmental monitoring system. This model aims to inspire policy frameworks and educational initiatives. In addition, the involvement of local government, environmental advocates, and the Environmental Agency (*Dinas Lingkungan Hidup, DLH*) is crucial. Their collaboration ensures that ritual practices of *Ogoh-ogoh* are not only preserved but also aligned with ecological responsibility.

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