

LITERATURE AND THE ECOLOGICAL CRISIS: AN ECOCRITICAL STUDY OF THE NOVEL GEMURUH IN THE CONTEXT OF THE SINABUNG ERUPTION

***(Sastra dan Krisis Ekologi: Studi Ekokritik Novel Gemuruh dalam Konteks Erupsi
Sinabung)***

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Abstract: This study applies Greg Garrard's ecocritical framework to analyze *Gemuruh*, a novel by Hilmi Faiq that explores the complex relationship between humans and the environment in the context of the eruption of Mount Sinabung. Using six main aspects of ecocriticism, this study identifies how natural disasters are represented not only as destructive events, but also as triggers for personal transformation, community resilience, and ecological awareness. The analysis shows that volcanic ash and environmental degradation (pollution) are depicted alongside the cultural and emotional attachment of the Karo people to their land (settlements and wilderness). Apocalyptic imagery affirms the destructive power of nature as well as the ethical urgency of disaster preparedness, while representations of animals and the earth highlight interconnectedness within the ecological system. Through a combination of documentary-style narrative and lyrical prose, *Gemuruh* builds a layered reflection on the struggle for survival, loss, and coexistence with an unpredictable environment. This research contributes to the international ecocritical discourse by highlighting the Indonesian literary perspective on the environmental crisis and offering insights into the role of literature in fostering ecological empathy and disaster literacy.

Keywords: *Ecocriticism; Environmental Literature; Gemuruh; Greg Garrard; Indonesia; Mount Sinabung*

A. INTRODUCTION

The worsening ecological crisis, caused by global environmental degradation, demands serious attention, especially in the context of education and public awareness. Industrialization and globalization have accelerated pollution and the loss of biodiversity, which threaten the sustainability of human life. The world's growing concern for this issue has led to the emergence of conceptual models of environmental awareness in education, although challenges such as a lack of interdisciplinary collaboration and low utilization of cutting-edge technologies, including big data and artificial intelligence, remain significant obstacles. The debate regarding the position of literature in articulating the environmental crisis can be likened to the Russian and global postmodernism discourse, which shows how literary works function as an arena for social, political, and ecological criticism, as demonstrated in the reading of Dmitri Prigov's novels, which position fiction as a laboratory for alternative social and cultural imagination (Khamitov & Buyanovskaya, 2025).

Something similar can also be seen in literary history, which has always been debated between historical objectivity and critical construction, but is still produced to understand the relationship between literary works and their cultural, political, and ecological contexts (Weststeijn, 2023, p. 161). In addition, recent studies show that literary texts can shape the behavior, cognition, and aesthetic experiences of their readers, as demonstrated in research on initial knowledge schemes in literary tourism in China, which reveals how literary education influences tourists' behavior in understanding places and environments (Yu & Xu, 2026, p. 1). From a broader perspective, the dynamics of literary representation are also inseparable from issues of gender and politics, where research on the canonization of Korean literature reveals inequality in the recognition of women's works, showing how cultural mechanisms contribute to the hierarchy of representation (Lee, 2025). Even the practice of collective writing in the Mao era challenged the concept of the author's sole authority, emphasizing the socio-ecological dimension of literature as a medium for collective participation in cultural transformation (Kindler, 2025, p. 1). All these findings underscore the importance of an ecocritical study of the novel *Gemuruh* in the context of the Sinabung eruption as an effort to understand how literary texts contribute to the formation of ecological awareness while offering a critique of the relationship between humans and their environment.

Although environmental education has been widely developed, research gaps are still evident in the local contexts of South Asia and Southeast Asia. In Nepal, for example, environmental science education has been developed since the 1970s, but it still faces limitations in resources, teacher training, and infrastructure that hinder its effective implementation (Yu & Xu, 2026, p. 1). A different context is shown in Germany through forest-based environmental education that provides broad access to the community, although public transportation barriers remain a major obstacle (Xu, 2023, p. 196). These dynamics highlight the importance of innovative pedagogical strategies to overcome structural limitations, while also emphasizing that environmental education is not only a matter of infrastructure, but also a form of cultural practice and ecological literacy rooted in a long history of community interaction with texts and literary traditions (Jones et al., 2023, p. 177). This is in line with findings that literacy and literary production are always connected to social, economic, and political structures, as seen in the development of communist internationalism literature in Kerala and post-Soviet literature, which served as an arena for criticism of the dominant discourse (Sreekumar, 2025, p. 108). Research on collective memory in Kazuo Ishiguro's work also shows how literary narratives can record shared experiences and influence generations' awareness of history and identity (Bai, 2023, p. 1). In this framework, eco-critical research on the novel *Gemuruh*, set against the backdrop of the eruption of Mount Sinabung, is significant because it not only fills a gap in environmental education studies in Southeast Asia but also enriches the discourse of literature as a medium of ecological awareness that unites local issues, collective history, and global challenges.

The novel *Gemuruh*, set against the backdrop of the eruption of Mount Sinabung, represents an ecological crisis not only through material damage in the form of volcanic ash, damaged land, and the death of livestock, but also a crisis of identity, loss of shelter, and the severing of the community's spiritual connection with the nature they have long inhabited, thus giving rise to an existential struggle to redefine humanity's place in a drastically changed ecological landscape (Carson, 2010, p. 477). This is in line with maritime ecocritical studies that emphasize the need for a new ecological imagination in facing the reality of climate change, where contemporary literature such as Monique

Roffey's Archipelago shows the centrality of the sea in the global ecological crisis and opens up an ethical reading space that challenges anthropocentric assumptions (Glassie, 2019, p. 924).

In a broader framework, contemporary fiction now tends to abandon its focus on human individuality and shift to exploring multispecies milieus, a representation of the world that places humans, animals, and the environment in an interconnected affective network (Rando, 2025, p. 1). The theoretical contribution of ecocriticism itself has sought to push the boundaries of literary studies toward recognition of the physical existence of nature as well as its socio-cultural construction, so that literature can be read as an ecology that challenges established cultural and ethical norms (Otterberg, 2009, p. 192). This perspective is intertwined with the ecosomatic paradigm that emphasizes the interconnectedness between the body, space, and environment, where human experiences of losing their homes due to ecological disasters need to be understood as a dialectic of the embodiment of the body with a world that is either livable or uninhabitable (Cella, 2013). Thus, *Gemuruh* can be positioned within the discourse of contemporary ecocriticism that highlights ecological materiality, from dust and dirt as an integral part of everyday life, to the global ecological crisis that demands a new perspective on humanity's entanglement with a fragile and never entirely "clean" nature (Sullivan, 2012, p. 515).

Ecocriticism as a theoretical framework examines the relationship between humans and nonhumans, emphasizing that nature is not merely a backdrop, but an active entity that shapes experience, identity, and cultural discourse (Garrard, 2012). This approach is relevant in the study of the novel *Gemuruh* because Garrard's six concepts: pollution, wilderness, apocalypse, dwelling, animals, and earth, provide an analytical toolkit for understanding representations of ecological crises, from volcanic ash pollution to the transformation of the meaning of dwelling and interspecies connectedness. In practice, ecocriticism does not stop at reading nature and the pastoral, but also questions the idea of "humanity" and opens up ethical space for animals as subjects with feelings and agency, as demonstrated in posthumanism discourse (Krell, 2017, p. 22). Recent developments in ecocriticism have even ventured into specific contexts, such as Mediterranean ecocriticism, which reveals the tragic relationship between human migration and environmental crisis (Iovino & Verdicchio, 2020, p. 325), and temporal ecocriticism, which highlights the interconnection between time, history, and the environment (Huebener, 2018, p. 327). In addition, ecocritical readings combined with narratology show how literary narratives shape readers' ecological perceptions, as demonstrated in the analysis of the novel *Waterland*, which highlights the intersection between storytelling and landscape representation (Bracke, 2018, p. 220). Thus, ecocriticism is a multidimensional approach that not only examines representations of the environment but also paves the way for a critical reading of the relationships between humans, animals, time, and space within a global ecological horizon (Goldwyn, 2016, p. 220).

This study aims to analyze the representation of ecological crisis in the novel *Gemuruh* from Garrard's ecocritical perspective, while contributing to the development of disaster literature studies in Indonesia. This research is expected to enrich our understanding of how literature can record, critique, and propose alternative imaginations of the relationship between humans and nature. In addition, this research offers practical contributions to ecological education and disaster mitigation policies through a cultural

approach, as literature can be an effective means of fostering ecological awareness across generations.

B. METHODS

This study employs a descriptive qualitative approach with a focus on literary text analysis using Garrard's ecocritical framework. The primary data consist of Hilmi Faiq's novel *Gemuruh*, which explicitly represents the experiences of the Karo community during the eruption of Mount Sinabung. The novel was selected because it presents a complex ecological disaster narrative that integrates natural, social, and cultural dimensions. To enrich the interpretation, this study also draws on secondary sources that include journal articles, books, and previous research related to ecocriticism, ecological literacy, and the representation of disaster in literary works.

Data were collected through two main techniques. The first technique was close reading of the novel to identify excerpts relevant to Garrard's six ecocritical categories: pollution, wilderness, apocalypse, dwelling, animals, and earth. This process ensured that each textual datum was contextualized within the theoretical framework. The second technique involved library documentation through a review of academic literature to strengthen the analysis, provide a broader conceptual foundation, and connect the findings from the novel to contemporary ecological research discourse.

Data were analyzed using the interactive model of Miles and Huberman, which consists of three stages: (1) data reduction by selecting excerpts that align with the ecocritical categories, (2) data display by organizing coded results into analytical themes, and (3) conclusion drawing and verification (Miles et al., 2014). To support the analysis, this study employs NVivo software as an analytical tool. NVivo facilitated the coding process, data organization, and visual mapping of intercategory connections. With NVivo, the analytical results can be presented systematically and accurately in the form of frequency tables, bar charts, and correlation maps across themes.

B. FINDINGS AND DISCUSSION

1. Pollution

Caused by natural and human activities, which in the context of ecological disasters often reveal the fragile relationship between humans and their living space. In the novel *Gemuruh*, pollution is mainly depicted through volcanic ash covering the village, destroying agricultural land, polluting water, and disrupting public health, thereby transforming the ecological landscape into a threatening space. Beyond its physical reality, pollution also manifests in symbolic form, marking the loss of order in life, the emergence of social crises, and the disruption of local community continuity. Thus, the phenomenon of pollution in this novel is presented in detail in data (1) to (3).

- (1) "*Suara gemuruh mengagetkanku. Suara ini sudah puluhan kali aku dengar sebelumnya. Tetapi, ini lain. Ini lebih dekat, sehingga seolah aku berada di dalam gemuruh itu sendiri*"The rumbling sound startled me. I had heard this sound dozens of

times before. But this was different. This was closer, so it was as if I was inside the rumbling itself." (Faiq, 2024, p. 1).

- (2) *"Itu bukan asap, melainkan debu vulkanik Gunung Sinabung. Bergulung-gulung memenuhi udara dan segala yang aku lihat"* It wasn't smoke, but volcanic ash from Mount Sinabung. It rolled in the air and filled everything I saw. (Faiq, 2024: 1).
- (3) *"Panggilanku dijawab Gunung Sinabung dengan gemuruh lebih dahsyat. Mirip bunyi puluhan truk yang menabrak rumah dan bangunan. Bunyi gemeretak kayu patah dan gaduh barang-barang jatuh silih berganti"* Mount Sinabung answered my call with an even more powerful rumble. It sounded like dozens of trucks crashing into houses and buildings. The sound of wood cracking and objects falling one after another (Faiq, 2024: 3).

Data (1) Shows acoustic pollution in the form of intense and traumatic rumbling sounds, indicating ecological disruption that is not only physical but also psychological; Data (2) Represents air pollution caused by volcanic dust that envelops living spaces, limits visibility, and damages the quality of the environment; Data (3) Describes acoustic pollution and material destruction, emphasizing an apocalyptic atmosphere in which the destruction of homes and the environment is intertwined with the noise of disaster. The Pollution category data in Hilmi Faiq's novel *Gemuruh* presents a representation of ecological pollution through rumbling sounds, volcanic dust, and material destruction caused by the eruption of Mount Sinabung. The rumbling sound that seems to envelop the characters' bodies presents a form of acoustic pollution that causes fear and trauma, while the volcanic dust that "rolls through the air" reflects air pollution that damages visibility and limits human interaction with the environment. Further descriptions of broken wood and falling objects reinforce the ecological disruption that unites noise and air pollution in an apocalyptic atmosphere. Thus, pollution in this text is understood not only as physical contamination, but also as a sensory and emotional experience that disrupts the ecological balance of humans, in line with Garrard's ecocritical framework, which emphasizes that pollution is a symbol of the severance of the harmonious relationship between humans and nature.

2. Wilderness

The concept of wilderness in ecocriticism emphasizes the wild as an autonomous space, characterized by ambivalence between its majestic charm and terrifying threats. In the novel *Gemuruh*, Mount Sinabung is described as a sovereign geological entity that "breathes" and "roars," signifying the power of nature that is not subject to human control. This representation evokes a sublime experience—a mixture of awe and fear—and reveals the fragile boundary between human domestic space and wild natural territory. The presence of the mountain as wilderness serves as a reminder that ecological disasters are not merely the result of natural events, but also a warning of human limitations in controlling the landscape they inhabit. The phenomenon of wilderness in this novel is presented in data (4) to (6).

- (4) *"Mungkin mereka adalah petani tomat dan cabai yang kami temui di sepanjang jalan Desa Gurukinayan hingga Suka Meriah. Mereka tengah menengok tanaman di ladangnya yang sudah berbulan-bulan ditinggalkan"* They were probably the tomato and chili farmers we met along the road from Gurukinayan Village to Suka Meriah. They were checking on their crops in fields that had been abandoned for months (Faiq, 2024: 4).

- (5) *"Orang Karo lahir dan tumbuh sebagai pekerja keras, sebagai petani dan pekebun. Dari pagi hingga petang mereka menghabiskan hidup di ladang dan kebun mengurus beragam tanaman"* he Karo people are born and raised as hard workers, as farmers and gardeners. From morning to evening, they spend their lives in the fields and gardens tending to various crops (Faiq, 2024: 4).
- (6) *"Jagung-jagung ini sudah lewat masa panen dan dibiarkan terbengkalai karena pemiliknya mengungsi. Daun-daun jagung menguning kering dengan tumpukan abu vulkanik tipis di atasnya, memberi kesan kematian"* This corn is past its harvest time and has been left abandoned because its owner fled. The dry, yellowing leaves of the corn, with a thin layer of volcanic ash on top, give the impression of death (Faiq, 2024: 20).

Data (4) Shows the community's attachment to agricultural land as a living space that is part of the wilderness, but has been abandoned due to disaster; Data (5) Describes the relationship between the Karo community's identity and nature, where fields and gardens are not only a source of income but also a representation of culture and identity; data (6) Shows the ecological degradation of the wilderness due to volcanic ash, which caused crop failure and symbolized the loss of natural balance and the community's source of livelihood. The Wilderness category data in the novel *Gemuruh* shows the Karo people's attachment to agricultural land that is part of the natural ecosystem. The excerpt shows how the community perceives fields and gardens as a space of cultural identity as well as an economic resource. However, due to the eruption, this attachment has been disrupted: the land is abandoned, the plants are dead, and agricultural activities have come to a standstill. This is in line with Garrard's ecocritical framework, which emphasizes that wilderness is not only understood as a wild natural space but also as a landscape that shapes human identity, culture, and survival. The destruction of wilderness due to disaster in this text also confirms the fragility of the relationship between humans and nature when the ecosystem is disrupted.

3. Apocalypse

The concept of apocalypse in ecocriticism describes images of doom and destruction that mark the end of ecological order and bring uncertainty about the future. In the novel *Gemuruh*, the eruption of Sinabung is presented through a pitch-black atmosphere, a sky covered in ash, and a devastated village, transforming the daily lives of the community into a precarious experience that seems to eliminate all hope. This narrative of local apocalypse not only emphasizes human vulnerability in the face of natural forces but also serves as a rhetorical strategy to raise ecological awareness through fear, loss, and disconnection from a peaceful past. The phenomenon of apocalypse in this novel is presented in data (7) to (10).

- (7) *"Jarak kami berada dengan puncak gunung sekitar tiga kilometer, masih ada waktu untuk menyelamatkan diri. Ada jambur yang atapnya lumayan utuh, tetapi tak ada dinding pelindung. Bersembunyi di sana sama saja dengan menyerahkan nyawa"* We were about three kilometers from the summit, so there was still time to escape. There was a small hut with a relatively intact roof, but no protective walls. Hiding there would be like giving up one's life (Faiq, 2024: 2).
- (8) *"Jaket parasut dan celana kargo yang membungkus tubuh terasa meleleh. Bau gosong menguar dari kepala. Mungkin saja rambutku, yang gimbal dan gondrong sebau ini, terbakar. Kakiku terasa melepuh"* The parachute jacket and cargo pants

- that covered my body felt weak. A burning smell wafted from my head. Maybe my dreadlocked, shoulder-length hair was on fire. My feet felt blistered (Faiq, 2024: 3).
- (9) *"Erupsi, woi!" Sembari terus memotret aku berteriak memberi tahu fotografer lain. Mereka pun tunggang-langgang meninggalkan aktivitas lain untuk memotret* 'Eruption, hey!' As I continued taking photos, I shouted to alert the other photographers. They all rushed to leave their other activities to take photos (Faiq, 2024: 12).
- (10) *"Gunung Sinabung memuntahkan abu vulkanik tegak ke atas, yang berarti embusan angin tak kencang. Bentuknya seperti bunga kol, lalu terus mengembang, membesar, dan dalam hitungan menit berubah seperti payung atau cendawan"* Mount Sinabung spewed volcanic ash straight upward, indicating a gentle gust of wind. Its shape resembled a cauliflower, then it continued to expand, growing, and within minutes, it transformed into an umbrella or mushroom (Faiq, 2024: 16).

Data (7) Depicts a critical situation where shelters are no longer safe, symbolizing apocalyptic conditions that destroy people's sense of security; Data (8) Shows physical suffering due to extreme heat, presenting apocalyptic imagery that emphasizes the proximity of disaster to the human body; Data (9) Shows collective panic in the midst of disaster, where the instinct to survive is mixed with the urge to document, signifying the absurdity of the apocalyptic atmosphere; Data (10) Presents a visual description of an eruption that is both magnificent and terrifying, a symbol of the destructive power of nature that is apocalyptic in nature. The Apocalypse (Disaster) category data in the novel *Gemuruh* represents an atmosphere of destruction that transcends human physical and psychological limits. The quotations show a situation where there is no longer any safe space, human bodies are vulnerable to deadly heat, and society is gripped by collective panic. Visual depictions of eruptions resembling cauliflowers and mushrooms also reinforce apocalyptic symbolism reminiscent of images of ecological doomsday. Within Garrard's framework of ecocriticism, the apocalypse is not merely natural destruction, but also a discourse on the fragility of the human position when faced with uncontrollable forces of nature. The representation of disaster in this text also reveals ambivalence: a sense of awe at the majesty of nature mixed with terror at its existential threat.

4. Dwelling

The concept of dwelling in ecocriticism highlights how humans build, inhabit, and give meaning to their living spaces, as well as how these experiences are shaken when ecological disasters force relocation and loss of place. In the novel *Gemuruh*, the ecological crisis caused by the eruption of Sinabung not only destroyed homes and farmland but also shattered the emotional, spiritual, and cultural ties of the community with their ancestral lands. Life in refugee camps presents a new experience of "dwelling," marked by longing for home, uncertainty of identity, and efforts to reestablish relationships with nature and the community. The phenomenon of dwelling in this novel is presented in data (11) to (14).

- (11) *"Di lokasi yang terdampak awan panas selalu muncul objek menarik secara jurnalistik dan fotografi. Orang-orang yang panik berlarian atau histeris karena rumahnya tak bisa lagi ditinggali"* Locations affected by hot clouds always present interesting journalistic and photographic subjects: panicked people running or hysterical because their homes are no longer habitable (Faiq, 2024: 13).

- (12) *"Kali ini aku akan masuk perkampungan untuk mengambil foto dengan foreground aktivitas warga. Dua hari lalu aku melihat beberapa warga berjemur pada pagi hari sambil duduk di depan rumah menatap gunung"* This time, I'm going into the village to take photos with the residents' activities in the foreground. Two days ago, I saw several residents sunbathing in the morning while sitting in front of their houses, gazing at the mountain (Faiq, 2024: 18).
- (13) *"Aku juga meminta nomor telepon untuk berjaga-jaga jika abu vulkanik menuju desa ini dan mereka harus mengungsi"* I also asked for a phone number in case volcanic ash came towards this village and they had to evacuate (Faiq, 2024: 20).
- (14) *"Sudah tiga bulan desa ini kosong ditinggal penduduknya mengungsi ke wilayah yang lebih aman, seperti di Jambur Adil Makmur, Jambur Sempakata, bahkan ada yang memilih pindah ke keluarganya di Medan, sekitar 80 kilometer dari kaki Gunung Sinabung ini"* For three months, this village has been empty, its residents have fled to safer areas, such as Jambur Adil Makmur, Jambur Sempakata, and some have even chosen to move to their families in Medan, around 80 kilometers from the foot of Mount Sinabung (Faiq, 2024: 2).

Data (11) Shows the loss of the home's function as a safe space, where settlements turn into crisis spaces that cause panic and a loss of sense of ownership; Data (12) Describes the community's efforts to maintain daily activities despite the threat of disaster, showing an emotional attachment to the home as a symbol of life; Data (13) Describes the vulnerability of settlements to unexpected ecological hazards, highlighting the importance of preparedness in ensuring survival; Data (14) Shows the condition of settlements abandoned en masse due to disaster, symbolizing the disconnection between humans and their living space. The Dwelling category data in the novel *Gemuruh* represents homes and villages not merely as physical spaces, but as symbols of identity, security, and continuity of life for the Karo people. However, the eruption of Mount Sinabung severed this connection: homes that were once places of shelter became dangerous spaces, social activities ceased, and the village was eventually abandoned en masse. This depiction shows how dwelling in Garrard's ecocritical framework is not only related to a place of residence but also to the cultural and emotional meanings attached to it. This novel shows that ecological disasters can take away not only material possessions but also a sense of belonging, cultural attachment, and the existential meaning of a community's living space.

5. Animals

The concept of animals in ecocriticism emphasizes the presence of animals as an important part of the ecosystem that not only functions biologically, but also has symbolic and ethical value in interspecies relationships. In the novel *Gemuruh*, the eruption of Sinabung is described as affecting the lives of animals, from livestock that died or fell ill due to volcanic ash to wildlife that fled their habitats, thus revealing the interconnectedness between human and non-human suffering in ecological disasters. The presence of animals in the narrative not only emphasizes environmental damage but also serves as a mirror for humans to reflect on their shared vulnerability in a fragile ecological landscape. The phenomenon of animals in this novel is presented in data (15).

- (15) *"Aku teringat tiga hari lalu melihat bangkai ular membeku masih dengan kepala tegak ke udara. Aku tidak mau bernasib sama dengan ular itu"* I remember three

days ago seeing a frozen snake carcass with its head still in the air. I didn't want to suffer the same fate as that snake (Faiq, 2024: 2).

Data (15) shows animals as direct victims of natural disasters. The frozen snake carcass with its head upright symbolizes the fragility of non-human living creatures when faced with the destructive forces of nature. Data in the Animals category in the novel *Gemuruh* describes the ecological connection between humans and animals in the face of disaster. The frozen dead snake is not merely a narrative detail, but a symbol of the vulnerability of all species in the face of the eruption of Mount Sinabung. The presence of animal imagery in this text also serves as a warning to humans that ecological damage has cross-species impacts. In Garrard's ecocritical perspective, animals are not merely present as background or objects, but as an integral part of an equal ecological system, so that the death of the snake also reflects a threat to human survival in the same ecological space.

6. Earth

The concept of earth in ecocriticism emphasizes the interconnectedness of the planet as a whole, where humans, animals, soil, water, and the atmosphere exist in an ecological network that influences each other and cannot be separated. In the novel *Gemuruh*, the eruption of Sinabung is described as a geological event that not only destroyed the local living space, but also shook the awareness of the earth as a fragile yet powerful life system. The ash that covered the air, the cracked soil, and the lava flow showed how the earth's dynamics work cyclically, presenting both threats and opportunities to rebuild more ethical ecological relationships. This narrative emphasizes that the earth is not merely a passive backdrop, but an active entity that mediates human relations with the environment. The phenomenon of earth in this novel is presented in data (16) to (19).

- (16) *"Debu bergulung-gulung disertai hawa panas, lalu disusul teriakanku. Per sekian detik kemudian, Joni menoleh, lalu berlari mengikuti langkahku"* Dust billowed in the heat, followed by my scream. A few seconds later, Joni turned around and ran after me (Faiq, 2024: 1).
- (17) *"Sebagian lagi bahkan tinggal tiang-tiang setelah rumah berdinding kayu itu terbakar, tak kuat menahan panas Gunung Sinabung"* Some of them were left with only pillars after the wooden-walled houses burned down, unable to withstand the heat of Mount Sinabung (Faiq, 2024: 1-2).
- (18) *"Aku sadar betul ancaman awan panas ini. Laju longsornya bisa mencapai kecepatan empat kali lebih lipat daripada air mendidih"* I am fully aware of the threat of this pyroclastic flow. The landslide can reach speeds four times faster than boiling water (Faiq, 2024: 2).
- (19) *"Aku menduga waktu itu dia hendak menyelamatkan diri saat awan panas menghambur, tetapi gerak melatannya kalah jauh dibandingkan kecepatan luncuran awan panas"* I thought that at that time he was trying to save himself when the hot clouds were pouring, but his crawling movements were far slower than the speed of the hot clouds (Faiq, 2024: 2).

Data (16) Depicts the earth as an unstable space, where dust and heat pose a direct threat to human survival; Data (17) Shows the vulnerability of the earth and human habitats to the destructive power of eruptions, where homes are destroyed, leaving only material remains; Data (18) Describes the power of the earth releasing massive energy, reflecting the destructive force of nature that far exceeds human control; Data (19) Shows

that the power of the earth through hot clouds eliminates any chance of survival, even when humans try to fight back with physical movement. The Earth category data in the novel *Gemuruh* affirms the role of the Earth as an elemental force that determines the survival or destruction of human life. The quotations show the earth in a state of rage: dust, heat, and fast-moving hot clouds present the reality that humans are very vulnerable in the face of geological forces. This representation shows the earth not only as a backdrop, but as an active agent in the narrative, capable of reestablishing ecological awareness that humans are only a small part of a larger planetary system. Within Garrard's framework of ecocriticism, earth emphasizes deep interconnectedness and vulnerability, and encourages ethical reflection on the position of humans in their ever-dynamic relationship with the earth.

Table 1. Percentage Coverage Environmental Fenomenon in *Gemuruh*

Coding	Percentage coverage
Pollution	7,95%
Wilderness	9,30%
Apocalypse	36,17%
Dwelling	32,97%
Animals	2,29%
Earth	9,20%

Table 1. Coverage Percentage shows that the most dominant representation in the novel *Gemuruh* is in the Apocalypse (36.17%) and Dwelling (32.97%) categories, indicating that the main focus of the narrative lies on the atmosphere of a major disaster caused by the eruption of Mount Sinabung and its impact on community settlements, such as panic, loss of homes, and displacement. Meanwhile, the Wilderness (9.30%) and Earth (9.20%) categories occupy the middle portion, reflecting the community's attachment to agricultural land damaged by volcanic ash and the uncontrollable geological forces of the earth. Pollution (7.95%) appears through descriptions of air and noise pollution, such as volcanic dust covering the air and the thunderous sounds of the disaster, causing trauma. The category with the smallest portion is Animals (2.29%), which, although minimal, still emphasizes the interconnectedness of species in facing ecological impacts. Overall, this data shows that the novel *Gemuruh* emphasizes the socio-ecological dimension of disasters over other environmental aspects, thus reinforcing the ecological message that natural disasters are not only physical crises but also crises of human living space.

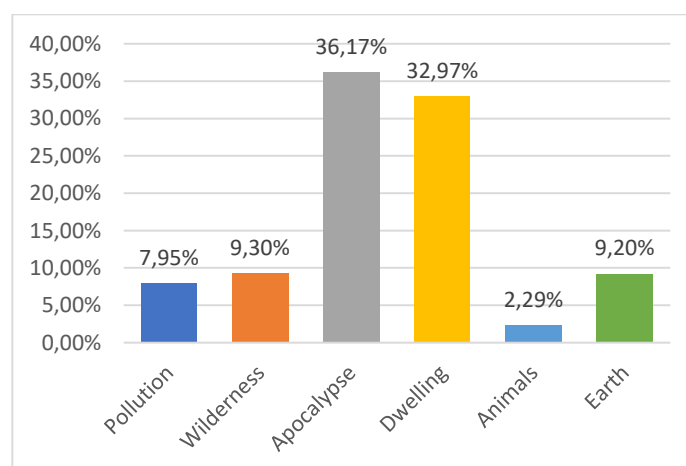


Figure 1. Percentage Coverage Comparison

Figure 1 shows the percentage distribution of Garrard's six categories of ecocriticism in Hilmi Faiq's novel *Gemuruh*. It can be seen that the categories Apocalypse (36.17%) and Dwelling (32.97%) dominate the representation, indicating that this novel emphasizes the atmosphere of disaster caused by the eruption of Mount Sinabung and its impact on community settlements, ranging from panic, loss of homes, to displacement. Meanwhile, Wilderness (9.30%) and Earth (9.20%) have a medium proportion, depicting the community's attachment to agricultural land and the uncontrollable geological forces of the earth. Pollution (7.95%) reflects air and noise pollution caused by volcanic ash and the roar of the disaster that caused trauma, while Animals (2.29%) occupies the smallest portion, although it remains important because it emphasizes the interconnection between species in the ecosystem. Overall, this image shows that the novel's narrative emphasizes the socio-ecological dimensions of disaster (apocalypse and dwelling) over other categories, so that the main ecological message conveyed is how natural disasters disrupt human living spaces while shaking the ecological balance.

Table 2. Correlation between Items

	1	2	3	4	5	6
Pollution	1					
Wilderness	0,245	1				
Apocalypse	0,344	0,303	1			
Dwelling	0,396	0,396	0,434	1		
Animals	0,208	0,046	0,221	0,193	1	
Earth	0,296	0,054	0,284	0,295	0,214	1

Table 2. This correlation shows the relationship between Garrard's six categories of ecocriticism in Hilmi Faiq's novel *Gemuruh*. The numbers indicate the degree of correlation between themes: the higher the value, the closer the relationship between the two categories. Apocalypse and Dwelling have the strongest correlation (0.434), indicating that the depiction of the major disaster caused by the eruption of Mount Sinabung is closely related to the loss of people's living space. Pollution correlates quite highly with Dwelling (0.396) and Apocalypse (0.344), showing that air and noise pollution caused by the eruption are an integral part of the depiction of disaster and damage to settlements. Wilderness also shows a relationship with Dwelling (0.396) and Apocalypse (0.303), reflecting the link between damage to agricultural land and the atmosphere of disaster and loss of living space. Animals had the lowest correlation, although they still showed a relationship with Apocalypse (0.221) and Earth (0.214), indicating that animals were also affected, even though they were not the central representation. Meanwhile, Earth has a consistent relationship with almost all categories—especially Pollution (0.296), Apocalypse (0.284), and Dwelling (0.295)—which confirms that the Earth as a geological force is the foundation of all ecological events. Thus, this table shows that the *Gemuruh* narrative is primarily constructed by the

interconnectedness of disasters, loss of settlements, pollution, and destruction. Thus, this table shows that the narrative of *Gemuruh* is constructed primarily by the connection between disasters, loss of settlements, pollution, and natural destruction, with the earth as the binding element.

C. FINDING AND DISCUSSION

The results of this study indicate that Hilmi Faiq's novel *Gemuruh* represents ecological crisis through Garrard's six categories of ecocriticism: pollution, wilderness, apocalypse, dwelling, animals, and earth. The narrative of the Sinabung eruption not only describes the physical impacts of air and noise pollution, but also touches on the psychological, social, and cultural aspects of the Karo community. The loss of safe living space emphasizes the importance of the dwelling category in understanding ecological trauma. This finding is in line with Juanda & Azis (2023a) research, which highlights ecological representations in the short stories *Pengelana Laut* and *Ketam Batu*, focusing on the exploitation of dolphins and the destruction of settlements due to mining. This shows that literary works can be a medium for critical reflection on the destruction of nature as well as a means of ecological education. Furthermore, this finding also supports Juanda & Azis (2023b) other research findings on Gus TF Sakai's short story *Ketam Batu*, in which the dominance of narratives about settlements depicts ecological unrest due to the expansion of mines that destroy living spaces. This research confirms that the aspect of dwelling is an important focus in ecocriticism, as is the case with the novel *Gemuruh*, which emphasizes the loss of safe shelter due to the eruption of Sinabung. From a literacy perspective, research by Juanda et al. (2024) found that digital short story literacy with environmental themes has a significant influence on the formation of environmentally conscious characters. From a literacy perspective, research by Juanda et al. (2024) found that digital short stories with environmental themes have a significant effect on shaping students' environmental awareness, even though reading interest does not always play a moderating role. This reinforces the argument that ecological literature, both print and digital, can be an effective means of instilling environmental awareness, including in the context of disaster mitigation. In addition, the link between mental simulation in reading literature and the formation of ecological awareness is also relevant. Mak et al. (2023) showed that motor, perceptual, and mental simulations during reading narrative texts are processed in specific areas of the brain that influence reader appreciation.

Literary works also play a strategic role in building ecological literacy. Lam & Putri (2024) emphasize that Kompas short stories reflect environmental issues such as pollution, settlement, and the earth. Containing effective environmental education values to shape ecological awareness (Fathiyah et al., 2025). In line with this, Jannah et al. (2024) in their study of Korrie Layun Rampan's novel *Upacara* found that Dayak traditional ceremonies contain ecological wisdom in the form of respect and love for nature. These two findings reinforce the view that local wisdom can be the basis for ecological education, as the novel *Gemuruh*, which depicts the ecological trauma of the Karo people, is in line with Garrard's theory.

From a cognitive perspective, reader engagement in literary texts is closely related to mental simulation. Mak et al. (2023) show that motor, perceptual, and mental simulations while reading literary texts activate certain areas of the brain that influence readers' appreciation, transportability, and perspective-taking. This supports the role of ecological

literature as a medium that fosters empathy and motivates real action. In the context of education, Capelo et al. (2015) asserts that reading literary texts challenges students to practice critical thinking skills such as interpretation, logical reasoning, and metacognition. Thus, reading ecological literature not only provides an aesthetic experience but also encourages the formation of critical awareness of environmental issues.

In addition, technological innovations have expanded the dimensions of ecological education. Safitri et al. (2025) proved that the use of augmented reality in environmental education increases student engagement, retention, and understanding of ecological issues in a more interactive way. This is in line with the findings of Islamiah et al. (2024), who emphasizes the need for creative and innovative approaches in literary education to instill environmental awareness from an early age. The integration of ecological literature with digital technology opens up new opportunities for building ecological literacy among the younger generation.

At the global level, Ifnaldi et al. (2025) research emphasizes that environmental literacy must be based on a multidisciplinary approach that integrates literature, culture, and policy to strengthen public ecological awareness. Environmental damage has long been a theme of concern in literary works, which then gave rise to ecocriticism as a reflective and critical discourse (Biasillo & Armiero, 2019). In the context of Eastern European literature, Post-communist works reconstruct cultural identity through ecological themes and human relations with nature, emphasizing that environmental issues are an integral part of national identity formation (Chauhan et al., 2025).

D. CONCLUSION

An ecocritical analysis of Hilmi Faiq's novel *Gemuruh* using Garrard's six main concepts—Pollution, Wilderness, Apocalypse, Dwelling, Animals, and Earth—shows that this novel narrates the ecological crisis holistically with a strong emphasis on the dimension of disaster and its impact on human living space. Data coverage shows that Apocalypse (36.17%) and Dwelling (32.97%) are the most dominant categories, indicating that the novel's main focus is on the community's experience of facing the eruption of Mount Sinabung and the loss of their settlements. The categories Wilderness (9.30%), Earth (9.20%), and Pollution (7.95%) occupy the middle range, reflecting the Karo people's attachment to agricultural land, the uncontrollable geological forces of the earth, and air and noise pollution caused by volcanic ash. Meanwhile, Animals (2.29%), despite its small portion, remains significant because it emphasizes that disasters have cross-species impacts.

The results of the correlation between categories reinforce these findings: Apocalypse and Dwelling emerge as the center of representational interconnectedness, with close links to Pollution and Wilderness, while Earth functions as a universal connector that affirms the role of the earth as an active agent in the ecological crisis. These findings confirm that the novel *Gemuruh* not only represents the eruption of Mount Sinabung as a natural event, but also as an ecological, social, and cultural experience that severs humanity's connection with its living space while forcing them to redefine their identity and relationship with nature. Thus, this work makes an important contribution to Indonesian ecocritical studies, demonstrating that literature can be a reflective and transformative medium in fostering ecological empathy and cross-generational disaster awareness.

These findings have theoretical implications in strengthening the application of Garrard's ecocriticism in Indonesian literature, practical implications for language and literature education in fostering ecological literacy and disaster awareness, and policy implications because literary works can be used as a strategic medium in the socialization of culture-based disaster mitigation. Thus, *Gemuruh* serves not only as a literary documentation of ecological tragedy, but also as a reflective and educational instrument that fosters ecological empathy and intergenerational sustainability awareness.

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