

WHEN FORESTS MAKE HEADLINES: HOW MALAYSIAN NEWSPAPERS FRAME AGARWOOD

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(Received 28th June 2026; revised 18th July 2026; accepted 31st July 2026)

Abstract. Agarwood (*Aquilaria* spp.), locally known as gaharu, is a high-value non-timber forest product that is steeped in complex intersections of cultural heritage, economic opportunity, and environmental concern. Despite its longstanding significance within Malaysia and across global trade networks, limited attention has been given to how agarwood is represented in national media. This study addresses this gap by examining media framing of agarwood in Malaysian newspaper coverage across linguistic contexts. Guided by framing theory and employing qualitative content analysis through reflexive thematic analysis, 267 articles from four major newspapers (The Star, New Straits Times, Berita Harian, and Utusan Malaysia) were systematically analyzed. The findings reveal distinct framing patterns between English- and Malay-language newspapers. English-language coverage predominantly emphasizes governance, trade, and law enforcement, frequently portraying agarwood as a regulated commodity associated with illegality, market dynamics, and policy intervention. In contrast, Malay-language reporting situates agarwood within cultural, religious, and everyday contexts, highlighting its role in traditional practices, spiritual experiences, and community life. Across the dataset, five overarching themes were identified: economy and industry, environment, science and education, governance and law enforcement, religion, beliefs and indigenous traditions, and society and culture. These divergent framings construct agarwood in dual yet largely disconnected ways, as both an economic resource subject to regulation and a cultural artefact embedded in social and spiritual life. This separation reflects broader patterns of segmented media discourse, where economic and institutional narratives rarely intersect with cultural meanings. The study demonstrates how such framings shape public understanding, legitimizing particular policy perspectives while rendering others less visible. By offering a systematic analysis of agarwood representation in Malaysian newspapers, this study contributes to scholarship in environmental communication and media framing, while illuminating how natural resources are discursively constructed within a multilingual and culturally layered media landscape.

Keywords: *Agarwood (Aquilaria spp.), media framing, environmental governance, cultural heritage, Malaysian newspaper*

Introduction

Agarwood (*Aquilaria* spp.), locally known as gaharu, is among the most prized non-timber forest products globally. Its resin-rich heartwood, formed in response to injury or infection, has long circulated through trade networks linking Southeast Asia with China, India, and the Middle East, where it became associated with ritual practice, elite consumption, and cultural prestige (Feng, 2024; Hall, 2022; López-Sampson and Page, 2018; Hashim et al., 2016). In Malaysia, gaharu remains culturally significant and continues to support rural livelihoods through harvesting, artisanal production, and small-scale trade (Lim and Awang Anak, 2010; Lim et al., 2007). In the contemporary era, agarwood occupies an increasingly contested position. Its exceptionally high market value has intensified pressure on wild populations (Blaser et al., 2021), contributing to

unsustainable harvesting, illegal trade, and the listing of several *Aquilaria* species under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the IUCN Red List. In Malaysia, these dynamics place agarwood at the intersection of environmental governance, economic opportunity, and conservation of cultural tradition (Thompson et al., 2022). Media representations shape public understanding of natural resources involving competing conservation, economic, and cultural interests such as agarwood. In Malaysia, newspapers play a central role in defining environmental issues and constructing meaning around social and economic risks. Previous studies have demonstrated that Malaysian news coverage actively frames issues in ways that privilege certain interpretations while marginalizing others, thereby shaping public perception and legitimizing particular policy responses (Wahab et al., 2025; Entman, 1993).

As a resource that embodies both economic opportunity and conservation concern, agarwood provides a useful case for examining how media framing shapes public understanding of environmental issues. Newspaper coverage of agarwood alternates between cultural–economic narratives emphasizing heritage, trade, and livelihoods and accounts centred on illegality, smuggling, and ecological risk, reflecting framing processes that shape how problems are defined and which responses appear legitimate to policymakers and the public (Laakso et al., 2024; Crow and Lawlor, 2016). Research on Malaysian newspapers has shown that framing patterns may vary across outlets and linguistic contexts (Wen et al., 2025). Despite agarwood’s cultural prominence and its significance in global trade and conservation debates, little is known about how it is represented in the Malaysian press. To date, no systematic study has examined how Malaysian newspapers frame agarwood across different linguistic and cultural contexts, revealing a gap in media research. Guided by framing theory and qualitative thematic analysis, this study addresses the following research questions: (1) RQ1: What were the dominant themes in Malaysian newspaper reporting on agarwood? (2) RQ2: How were these themes represented across different linguistic and cultural contexts? (3) RQ3: What do these patterns reveal about the ways newspapers construct meaning around agarwood? By analysing 267 newspaper articles drawn from four major Malaysian newspapers, this study contributes to research on environmental communication and media framing. It shows how agarwood is constructed both as a regulated commodity vulnerable to exploitation and as a cultural resource embedded in ritual and everyday practice. In doing so, the paper illuminates how media framing shapes public understanding of agarwood and influences the governance and cultural trajectories of non-timber forest products within Malaysia’s evolving socio-ecological landscape.

Literature review

Agarwood as a cultural and economic resource

Scholarly literature consistently situates agarwood (*Aquilaria* spp.) as a resource shaped by the intersection of cultural meaning, religious practice, and economic value. Historical accounts describe agarwood as a high-value commodity circulating through maritime and overland trade networks linking Southeast Asia with China, India, the Middle East, and Europe, with Melaka emerging by the fifteenth century as a key entrepôt within the Indian Ocean trading system (Hall, 2022). Studies of late medieval China further highlight agarwood’s association with elite consumption, symbolic prestige, and ritual use, underscoring how rarity and fragrance underpinned its cultural

and economic importance. Beyond trade, researchers have documented agarwood's enduring ritual and spiritual significance across Islamic, Buddhist, Hindu, and Christian traditions (Shi et al., 2022; Mahdizadeh et al., 2015; Barden et al., 2000). Its use in incense, healing practices, and ceremonial rites reinforces its dual identity as both a sacred material and a luxury good, a recurring theme in the literature that has shaped how agarwood is historically valued, exchanged, and governed (Shi et al., 2022; Mahdizadeh et al., 2015). Contemporary studies in Malaysia extend this perspective by situating gaharu within local livelihoods and rural economies. Ethnographic and socio-economic research highlights its continued role in small-scale harvesting, artisanal production, and informal trade, particularly in forest-dependent communities (Royyani et al., 2026; Sano and Inoue, 2024; Kanazawa, 2017). At the same time, rising global demand and escalating prices, where premium-grade chips and distilled agarwood oil represent extreme value concentration within non-timber forest product markets, have intensified harvesting pressure on wild populations (Hashim et al., 2025; Blaser et al., 2021; Kanazawa, 2017).

This combination has positioned agarwood as a focal conservation concern. Studies link overexploitation, illegal logging, and transnational smuggling to the listing of several *Aquilaria* species under CITES Appendix II and the IUCN Red List (Thompson et al., 2022; López-Sampson and Page, 2018; Barden et al., 2000). In the Malaysian context, these dynamics reflect broader tensions between conservation policy, economic development, and the protection of cultural heritage (Thompson et al., 2022; Azren et al., 2021). Taken together, the literature highlights agarwood as a resource whose meanings extend beyond material value, rendering it particularly susceptible to discursive construction and contestation in public discourse (Crow and Lawlor, 2016; Entman, 1993).

Media framing and environmental communication

Media framing refers to the process through which news media select certain aspects of reality and make them more salient in communication, thereby shaping how issues are understood and evaluated (Entman, 1993). By highlighting certain problem definitions, causal interpretations, and policy responses, framing influences how complex social and environmental issues are understood in public discourse. In media studies, agenda-setting theory explains how news media influence which issues receive public attention (McCombs and Shaw, 1972), while framing theory examines how those issues are interpreted within media discourse (Entman, 1993), shaping problem definitions, explanations, and responses. Through framing, media highlight particular problem definitions, causal explanations, and possible solutions, thereby influencing how audiences understand complex social and environmental issues. Because environmental problems often involve competing scientific, economic, and cultural perspectives, media framing plays a particularly important role in shaping public understanding and policy debate. Media representations can legitimize certain policy approaches while marginalizing alternative perspectives (Boykoff, 2009; Ader, 1995). Recent work further demonstrates that environmental issues are often framed through simplified narratives that emphasize regulation, crisis, or technological solutions, while downplaying social, cultural, or indigenous dimensions (Laakso et al., 2024). When applied to forest resources and non-timber forest products, media framing often oscillates between narratives of economic opportunity and environmental risk. Such portrayals influence how stakeholders understand resource governance, sustainability,

and legitimacy, shaping the boundaries of public debate and policy response. Understanding these framing dynamics is particularly relevant for resources such as agarwood, where conservation concerns, economic interests, and cultural meanings intersect.

Malaysian newspaper landscape and environmental reporting

In light of these framing dynamics, Malaysia's national press landscape is linguistically and culturally diverse, reflecting the country's plural society. Newspapers are published in Malay, English, Chinese, and Tamil, each catering to different readerships and cultural contexts (Ramli, 2019). Malay-language newspapers such as *Berita Harian* and *Utusan Malaysia* reach wide domestic audiences and often foreground themes of national identity, rural development, and cultural continuity. English-language dailies such as *New Straits Times* and *The Star* address both domestic and international readers, frequently situating environmental and economic issues within global contexts (Abdullah et al., 2021). Editorial orientations are shaped by ownership structures and political affiliations, influencing topic selection and framing practices (Ramli, 2019). Research on Malaysian environmental reporting indicates that mainstream newspapers often privilege official sources and institutional perspectives, particularly in coverage of environmental governance and regulation (Saleh and Heinrichs, 2020). Linguistic positioning further shapes representation, with different newspapers emphasizing distinct dimensions of environmental issues depending on audience expectations and cultural framing.

Research gaps in media coverage of agarwood

Research on environmental communication has demonstrated that media framing can significantly influence how environmental issues and natural resources are understood by the public and policymakers. Previous studies have examined how media coverage shapes public narratives surrounding wildlife trade and conservation challenges. For instance, analyses of news media reporting on the illegal wildlife trade have shown that media portrayals can influence public awareness and conservation discourse surrounding species exploitation (Easter et al., 2023). Similarly, research examining media representation of the exotic pet trade highlights how framing, language, and taxonomic emphasis can influence perceptions of animal welfare and biodiversity conservation (Bielby et al., 2025). Beyond wildlife trade, environmental history studies of high-value forest commodities such as sandalwood illustrate how cultural narratives, trade dynamics, and resource scarcity can shape broader public discourse surrounding natural resources (Linsheng, 2022). However, despite the growing body of research examining media representations of environmental issues and natural resource commodities, little attention has been given to how agarwood is framed in media discourse. This gap is particularly notable in Southeast Asia, where agarwood holds significant ecological, economic, and cultural importance. Understanding how agarwood is portrayed in the media is therefore important for examining how narratives surrounding conservation, trade, and cultural heritage are constructed and communicated.

Materials and Methods

Research design

Building on the literature that highlights agarwood as a contested resource shaped by multiple cultural, economic, and environmental meanings, and on framing theory's emphasis on how media construct such meanings, this study employed a qualitative content analysis approach using reflexive thematic analysis (RTA) as outlined by Braun and Clarke (2019) to examine how agarwood was framed in Malaysian newspaper reporting. RTA enables identification of explicit patterns and underlying meanings in media texts. An inductive coding approach was used to assess patterns of meaning and framing that emerged from the newspaper coverage, with particular attention to cultural, economic, environmental, and legal narratives. The analysis combined manifest content (theme frequency) with latent interpretation of underlying narratives. This dual focus allowed the study to capture both observable patterns and broader framing dynamics within Malaysian newspaper reporting (Adler and Burnett, 2024).

Sample and data collection

Newspaper articles containing the keywords “agarwood” or “gaharu” were collected from four major Malaysian newspapers: Berita Harian, Utusan Malaysia, New Straits Times, and The Star. These newspapers were selected for their wide readership, national influence, and representation of both Malay- and English-language media. No temporal restrictions were imposed, allowing coverage from the earliest available digital archives through to the most recent publications to be included. Articles were retrieved through official newspaper archives and relevant digital databases. The inclusion of both Malay (“gaharu”) and English (“agarwood”) search terms ensured comprehensive coverage across linguistic contexts. An initial search yielded 294 articles. All articles were reviewed to assess relevance. Duplicates, syndicated repetitions, and items in which agarwood appeared only as a passing or incidental reference were excluded, consistent with common practices in media content analysis (Pigeon, 2017). Following this screening process, 267 articles were retained for analysis. *Table 1* shows the number of articles on “agarwood/gaharu” retrieved from the four newspapers, spanning from the earliest available archives to the most recent publications.

Table 1. *Distribution of “agarwood/gaharu” coverage across four major Malaysian newspapers, indicating total articles found, included in the analysis, and excluded.*

Malaysian Newspapers	Articles Found	Articles Included	Articles Removed*
Berita Harian	56	45	11
Utusan Malaysia	33	31	2
New Straits Times	49	47	2
The Star	156	144	12
Total	294	267	27

*Note: *Removed due to repetitive/duplicate, passing reference and/or irrelevance to agarwood/gaharu news.*

Data analysis

Data analysis followed the six-phase process of reflexive thematic analysis described by Braun and Clarke (2019). All articles were read repeatedly to achieve familiarity with the data, followed by inductive coding to identify recurring patterns of meaning.

Codes were developed to reflect cultural, economic, environmental, governance, and belief-related narratives present in the texts. Coding and theme development were conducted using ATLAS.ti (Lumivero/ATLAS.ti Scientific Software Development GmbH), facilitating systematic organization and retrieval of coded data. Throughout the analytical process, themes were iteratively reviewed, refined, and restructured to ensure coherence and analytic depth. Analytical rigor was supported through ongoing reflexive engagement with the data and regular team discussions to review emerging themes and interpretations (Cofie et al., 2022). Rather than seeking statistical reliability, the analysis emphasized transparency, reflexivity, and interpretive consistency, in line with the principles of reflexive thematic analysis.

Results and Discussion

Newspaper coverage

The analysis of newspaper coverage revealed notable differences in how frequently agarwood was reported across major Malaysian newspapers. The Star published the largest number of articles, with 144 pieces, followed by New Straits Times (47), Berita Harian (45), and Utusan Malaysia (31). This pattern indicates differing emphasis on agarwood-related issues across newspapers. Coverage in The Star began as early as 2004, with a sharp peak in 2014 (22 articles), while the New Straits Times only became active in 2013, recording smaller peaks in 2014 (8 articles) and 2019 (10 articles). Malay newspapers became more prominent after 2015, with Berita Harian showing spikes in 2016 (11 articles) and 2020 (12 articles), and Utusan Malaysia recording steady coverage between 2016 and 2021, peaking at nine articles in 2020. Overall, agarwood reporting across all four newspapers intensified between 2014 and 2021, before declining in recent years. *Figure 1* shows the annual distribution of agarwood-related articles, illustrating the earlier start and sharper peak of English newspapers compared to the gradual rise of Malay outlets after 2015. Scattered international references surfaced but remained secondary. For instance, The Star highlighted Dubai's luxury perfume market, reports from Vietnam linked agarwood to tourism and forest conservation, and Utusan Malaysia described a student in Flores Timur, Indonesia, attending an online convocation from an agarwood forest due to stronger internet connectivity. Most articles focused on the national context, with occasional references to international trade and use.

Figure 2. Word frequency analysis of agarwood-related news coverage in Malaysian newspapers using ATLAS.ti. Left: English-language newspapers emphasize terms such as “agarwood,” “nation,” “forest,” and “market.” Right: Malay-language newspapers highlight terms such as “gaharu,” “hutan,” “pokok,” and “nasional.”

Thematic analysis

Analysis of 267 articles identified five overarching themes: (i) economy and industry (ekonomi dan industri), (ii) environment, science and education (alam sekitar, sains dan pendidikan), (iii) governance and law enforcement (kawal selia dan undang-undang), (iv) religion, beliefs and indigenous traditions (keagamaan, kepercayaan dan tradisi), and (v) society and culture (sosial dan budaya). These themes, developed through RTA, encompassed multiple sub-themes that captured the diverse ways agarwood was represented in the Malaysian press. Within this framework, English-language newspapers were more frequently associated with market-oriented and regulatory aspects, whereas Malay-language newspapers were more often associated with cultural heritage, social values, and local practices.

Distribution of themes across newspapers

The distribution of themes differed between English- and Malay-language newspapers. In the English-language outlets (The Star and New Straits Times), coverage was dominated by governance and law enforcement, alongside substantial attention to economy- and industry-related issues. The Star demonstrated relatively broader thematic coverage, balancing stories on governance, industry, and environment, science and education, whereas the New Straits Times placed stronger emphasis on commercial and plantation-related developments. *Figure 3a* illustrates this pattern, with governance and industry emerging as the dominant themes across English-language outlets. In contrast, the Malay-language newspapers (Berita Harian and Utusan Malaysia) displayed a more balanced thematic distribution. Although governance and law enforcement (29 articles) and economy and industry (28 articles) remained prominent, religion, beliefs and indigenous traditions (13 articles), as well as society and culture (14 articles), received comparatively greater attention than in the English-language newspapers. These outlets framed agarwood not only through enforcement and economic concerns but also within festive, religious, and cultural contexts embedded in everyday Malay social life. *Figure 3b* reflects this broader thematic spread, particularly through the increased visibility of cultural and spiritual dimensions. Taken together, *Figure 3a* and *Figure 3b* demonstrate distinct editorial emphases between language groups. English-language newspapers tended to frame agarwood in relation to governance, economy, and conservation, whereas Malay-language newspapers placed comparatively greater emphasis on cultural, spiritual, and community-based dimensions.

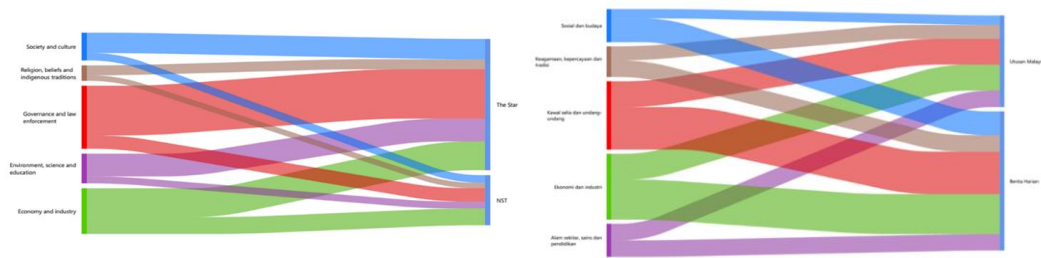


Figure 3. Publisher–theme Sankey diagrams for Left: English-language newspapers (*The Star* and *New Straits Times*) and Right: Malay-language newspapers (*Berita Harian* and *Utusan Malaysia*), generated using *ATLAS.ti*. The diagrams illustrate how thematic emphasis varies across publishers.

Themes, sub-themes, and representative quotations

Building on these overarching themes, a set of sub-themes was constructed to capture the nuances of agarwood reporting. *Table 2* presents the themes and sub-themes alongside representative quotations drawn from both English- and Malay-language newspapers. These quotations illustrate how coverage was coded within each category and provide concrete examples of the framing patterns observed in the dataset. Together, the themes reflect the various dimensions through which agarwood was represented in the selected newspapers.

Table 2. Overarching themes, associated sub-themes, and representative quotations illustrating how agarwood was reported in English- and Malay-language newspapers.

Theme	Sub-theme	Representation quotes from both English and Malay newspapers
Economy and Industry (Ekonomi dan Industri)	Agarwood industry	English: “Malacca is set to become a producer of high-grade agarwood resin, used in the manufacture of fragrant oils, with large-scale cultivation of the karas tree.” <i>The Star</i> , 28 January 2009. Malay: “Industri gaharu berpotensi dikembangkan di peringkat hiliran kerana belum ramai usahawan yang terbabit dalam sektor ini, terutama dalam pembuatan minyak wangi, kata Menteri Perusahaan Perladangan dan Komoditi, Datuk Dr Mohd Khairuddin Aman Razali.” <i>Berita Harian</i> , 21 June 2020.
	Global agarwood market	English: “Synbion Sdn Bhd, a spin-off company of UMPSA Holdings Sdn Bhd, has inked a memorandum of understanding (MoA) with Philippines-based United Agarwood Planters Inc (UAP) to boost their joint collaboration in the agarwood industry.” <i>New Straits Times</i> , 12 September 2024. Malay: “Kapasiti pengeluaran kami kini ialah kira-kira dua tan metrik sebulan. Kami boleh meningkatkan kapasiti kami apabila permintaan meningkat.” <i>Berita Harian</i> , 28 February 2016.
	Local agarwood products	English: “I heard that the prices for Chinese mugwort and agarwood have gone up, he said.” <i>The Star</i> , 28 January 2023. Malay: “GABUNGAN pati gaharu dengan haruman mawar, vanilla, strawberi, dan coklat sememangnya begitu digemari kerana ia dapat memberi ketenangan dan hidup yang lebih nyaman untuk kediaman.” <i>Utusan Malaysia</i> , 14 November 2021.
	Agarwood perfumes	English: “Mukhallat, which translates into mixture, is reflected in the new concentrates as Mukhallat Malaysia Khas has a bright rose notes with aromatic sandalwood as well as agarwood oil and exotic musk to complete the concoction.” <i>The Star</i> , 3 September 2011. Malay: “Kita dapat melihat peningkatan permintaan terhadap kayu gaharu, khususnya dalam industri minyak wangi.” <i>Berita Harian</i> , 27 February 2025.
	Plantation and commodity	English: “Sarawak Land Consolidation and Rehabilitation Authority (Salcra) is planning to venture into the planting of “gaharu” trees (also called jinko,

aloeswood, agarwood or oud)." The Star, 19 August 2013.

Malay: "Contohnya, kita ada memasarkan produk minyak wangi yang dihasilkan daripada kayu gaharu dengan kerjasama usahawan luar." Utusan Malaysia, 21 August 2019.

Environment, science and education (Alam sekitar, sains dan Pendidikan)	
Environment and ecology	English: "In partnership with the Forest Research Institute of Malaysia (FRIM), up to 1,000 trees within the site have been identified and tagged for preservation." New Straits Times, 2 July 2020. Malay: "Contohnya, pokok gaharu, kelapa sawit dan pokok-pokok hutan lain akan memberi pendapatan jangka panjang." Utusan Malaysia, 7 July 2021.
Scientific research on agarwood	English: "An innovation to boost the extraction of agarwood oil was among the outstanding products which saw Universiti Malaysia Pahang (UMP) walk away with 14 gold medals." New Straits Times, 7 June 2022. Malay: "Juara Agarwood Resources Sdn Bhd, pengeluar produk berasaskan tanaman gaharu memperkenalkan dapur moden menerusi teknologi dan inovasi dapur teknologi digital." Berita Harian, 23 December 2019.
Governance and law enforcement (Kawal selia dan undang-undang)	
Regulatory authorities	English: "Only 53 companies and individuals out of more than 400 growers of agarwood (<i>Aquilaria malaccensis</i>) have registered with Malaysian Timber Industry Board (MITB) and attempt to export the product without a permit from MTIB would be considered illegal." New Straits Times, 13 November 2014. Malay: "Kerjasama dengan PDRM dan ATM dapat membantu merancang strategi terkini bagi menjalankan operasi bersepadu untuk mengurangkan kes kecurian kayu gaharu dan khazanah hutan serta membendung jenayah alam sekitar lain." Berita Harian, 11 October 2016.
Encroachment, smuggling, theft and corruption	English: "Maliau Basin, Malaysia's 'Lost World' deep in the heart of Sabah, was breached for its highly valuable gaharu, or agarwood, recently." New Straits Times, 29 August 2021. Malay: "Sebanyak 100 kilogram kayu gaharu yang diimport dari Vietnam bernilai RM14,821.66 dirampas pihak berkuasa di Lapangan Terbang Antarabangsa Kuala Lumpur (KLIA) di sini, Selasa lalu." Utusan Malaysia, 15 April 2021.
Religion, beliefs, and indigenous tradition (Keagamaan, kepercayaan, tradisi orang asli)	
Mystical beliefs	English: "He put them in the bushes and in a hut to protect his 10 durian trees and burned the gaharu wood to create a spooky environment before returning to his house every evening." The Star, 19 June 2020. Malay: "Elakkan jumpa bomoh yang menggunakan colok, kayu gaharu, lilin, setangi dan lilin." Berita Harian, 20 December 2015.
Traditional practices	English: "Ong Chin Chye, 64, who runs a traditional dragon joss stick factory in Kubang Semang - a small village in Bukit Mertajam, Seberang Perai in Penang." The Star, 4 February 2024. Malay: "Lantas ia digunakan sejak turun-temurun, selain digunakan untuk upacara keagamaan, perubatan tradisional dan bahan asas pembuatan minyak wangi." Berita Harian, 27 September 2021.
Indigenous communities	English: "It is a must to meet the Tok Batin or headman, before meeting the community. Their daily routine is to go in the jungle to find gaharu trees while the ladies go fishing at the lake." New Straits Times, 9 August 2020. Malay: "Saya bersama rakan Orang Asli Bateq masuk ke hutan selama dua minggu untuk mencari kayu gaharu, umbut bayas, siput sedut dan sumber lain." Utusan Malaysia, 24 March 2021.
Religious Practices	English: "Ong's sticks are primarily made from sawdust, using a mix of locally grown 'meranti' timber - a common hardwood in Southeast Asia - and aromatic agarwood." The Star, 22 January 2020. Malay: "Setiap kali menghidu bau oud atau gaharu, saya terkenangkan waktu beribadah di Tanah Suci kerana di sana rata-rata memakai minyak wangi berasaskan bahan ini." Berita Harian, 22 October 2016.

Society and culture (Sosial dan budaya)	
Community activities	English: “Two Lions Clubs in Penang have embarked on a project to plant 450 gaharu (agarwood) trees in the forests of Penang island, in light of the rampant poaching by locals and foreigners.” The Star, 20 January 2014. Malay: “Baru-baru ini, penulis berpeluang menjejakkan kaki ke ladang teh GaharuTea Valley bersama rakan pasukan Haval 4.” Berita Harian, 11 December 2018.
Art, heritage and culture	English: “The 56-year-old Penangite expertly creates collages with pieces of agarwood. From scenic landscapes to simple sculptures, each is full of texture and finesse.” The Star, 14 January 2014. Malay: “Malah, jalan denai dirintis Mat Kilau menjadi laluan pencari kayu gaharu hingga hari ini.” Utusan Malaysia, 10 July 2022.

Economy and Industry (Ekonomi dan Industri)

Agarwood was widely portrayed as an economic asset. In English-language coverage, this theme accounted for 25% of coded references, with strong emphasis on global trade and industry narratives. In contrast, Malay newspapers dedicated a smaller share (14%) but highlighted local livelihoods, small-scale product innovation, and plantation initiatives. Across both outlets, agarwood appeared as both a traditional commodity and a modern industrial product.

Environment, Science, and Education (Alam sekitar, Sains dan Pendidikan)

This theme reflected the dual positioning of agarwood as both ecologically vulnerable and scientifically valuable. It accounted for 17% of the coded references in English-language newspapers and nearly double that in Malay (29%). Reports ranged from biodiversity loss and sustainability debates to the role of research in resin formation and cultivation techniques.

Governance and Law Enforcement (Kawal Selia dan Undang-undang)

Governance and enforcement emerged as the most dominant theme overall, comprising 35% of English-language articles and 30% of Malay-language articles. English newspapers often reported on international smuggling and cross-border trafficking, while Malay outlets emphasized domestic enforcement operations and corruption cases. Coverage consistently presented agarwood as a resource vulnerable to illegal exploitation but subject to state oversight.

Religion, Beliefs, and Indigenous Tradition (Keagamaan, Kepercayaan, Tradisi Orang Asli)

This theme was more visible in Malay newspapers (13%) than in English (8%). Malay reporting gave particular weight to spiritual and cultural framings, with agarwood appearing in accounts of Islamic rituals, festive occasions, and traditional healing. Mystical beliefs and indigenous practices further emphasized its symbolic and ritual value. Such accounts were largely absent in English-language reporting.

Society and Culture (Sosial dan Budaya)

Agarwood was also linked to broader cultural and social life. This theme represented 15% of English coverage and 14% of Malay. Coverage included community festivals,

exhibitions, and collective events, while heritage and art narratives connected agarwood to craftsmanship, identity, and national heritage.

Malaysian newspaper coverage constructs agarwood through distinct and sometimes competing frames. English-language outlets foreground governance, trade, and enforcement, whereas Malay-language reporting embeds agarwood within religious, cultural, and everyday contexts. Together, these portrayals position agarwood either as a regulated commodity vulnerable to illegality or as a heritage resource tied to ritual and identity. This dual positioning shapes how its social and policy significance is understood within Malaysia's media landscape.

Governance, economy, and illegality

Across all newspapers, agarwood was frequently depicted as a resource entangled with illegality and regulation. English-language outlets foregrounded governance and industry, highlighting seizures, smuggling networks, corruption, and plantation development. Reports emphasized enforcement actions, including a November 2024 New Straits Times article describing a high-value confiscation led by the Department of Wildlife and National Parks (Perhilitan). At the same time, coverage also underscored agarwood's economic potential; a June 2023 Berita Harian article, for example, reported on initiatives to promote plantations as high-return investments capable of supporting local economies. Such portrayals echo broader recognition of agarwood's scientific and commercial importance (Hashim et al., 2022). Nevertheless, media treatment remained largely confined to crime and commerce. This narrow focus reflects longstanding critiques of NTFP reporting, which caution that commercialization often generates ecological pressures and uneven distribution of benefits (Belcher and Schreckenberg, 2007). Comparative studies further demonstrate how dependence on forest products shapes conservation attitudes and management decisions across contexts, including the Kashmir Himalaya, Vietnam, and southern India (Dawood et al., 2025; Duong et al., 2021; Hegde and Enters, 2000). In Southeast Asia, policy analyses emphasize the need for integrated approaches that balance conservation with community use (Heinen and Shrestha-Acharya, 2011). By contrast, Malaysian newspaper coverage tended to privilege government control and regulatory enforcement, with limited attention to sustainability, community participation, or livelihood concerns.

Environment, science, and knowledge

Agarwood was also represented as both ecologically vulnerable and scientifically valuable. Coverage addressed biodiversity loss, sustainability debates, resin formation, and cultivation techniques, positioning science and education as key mechanisms for safeguarding the resource. English-language outlets frequently linked this framing to conservation and international sustainability agendas, whereas Malay newspapers emphasized local research and cultivation trials. For example, The Star (17 September 2023) reported on FRIM research into karas trees and resin production, noting that "studies ... have reduced the issue of agarwood theft in natural forests, thus protecting the species from extinction." The article further presented biological agents, sensor detection, and gas chromatography as technological solutions to ecological vulnerability and industrial quality control. Although newspapers portrayed scientific advances as offering straightforward solutions, they often overlooked the uncertainties inherent in agarwood research. Agarwood-associated fungi exhibit diverse and sometimes

unpredictable biosynthetic activities (Du et al., 2022), and plantations remain vulnerable to insect pests and diseases that undermine production (Syazwan et al., 2019). Such complexities were largely absent from reporting, which instead framed science as a linear pathway to conservation and commercialization.

This pattern reflects broader global trends in environmental reporting, where scientific authority is often invoked to define problems and legitimize solutions (Boykoff, 2009). Similar dynamics are evident in Malaysia, where coverage frequently privileges governmental and scientific actors over alternative perspectives (Saleh and Heinrichs, 2020). Within this framing, formal institutions dominate, leaving limited space for indigenous or community ecological knowledge. As Berkes (2009) notes, local expertise is central to sustainable resource management yet is often marginalized in favor of technical narratives. By privileging institutional science over traditional practices, Malaysian newspaper coverage reinforced a narrow vision of conservation that risks excluding communities most directly connected to agarwood. At the same time, not all reporting centered on institutional authority; Malay-language outlets often embedded agarwood within cultural and spiritual contexts, linking it to ritual, religion, and collective memory.

Religion, culture, and everyday life

These cultural framings were especially prominent in Malay-language newspapers, which frequently situated agarwood within festivals, Islamic rituals, traditional healing, mystical beliefs, and indigenous practices. A Berita Harian report (22 October 2016), for instance, linked the scent of oud to pilgrimage experiences, with a worshipper recalling: “saya terkenangkan waktu beribadah di Tanah Suci kerana di sana rata-rata memakai minyak wangi berasaskan bahan ini.” The article thus highlighted how agarwood’s fragrance evoked memories of worship in the Holy Land, underscoring its spiritual and cultural resonance. In this framing, agarwood appeared not merely as a commodity but as a substance embedded in spiritual life and collective memory. Such portrayals echo global examples in which culturally significant forest products, such as sandalwood in India or frankincense in the Middle East, are valued as spiritual and heritage resources as well as commodities (Shivanand et al., 2022; López-Sampson and Page, 2018). The relative scarcity of religious and indigenous perspectives in English-language coverage further illustrates how linguistic and cultural positioning shape which dimensions of agarwood enter public discourse. These cultural portrayals rarely intersected with economic, enforcement, or scientific narratives, reinforcing a broader divergence that becomes most visible when English- and Malay-language reporting are examined side by side.

Constructing distinct meanings

Viewed together, the findings reveal two largely distinct constructions of agarwood in the Malaysian press. English-language newspapers framed it primarily as an economic and conservation issue defined by governance, trade, and enforcement, whereas Malay-language newspapers more consistently embedded it within traditions, rituals, and social practices. The separation between these portrayals is striking. Reports on smuggling or plantations rarely referenced ritual or cultural meaning, while culturally oriented stories seldom engaged with enforcement or conservation. This pattern mirrors Adler and Burnett’s (2024) observation of “siloe discourses” in

cannabis reporting, where cannabis was framed either as “poison” or “medicine” but seldom both. In the case of agarwood, coverage positioned it either as a regulated commodity or as a heritage resource tied to identity. For example, *New Straits Times* (19 March 2019) published *Protect Our Forests’ Liquid Gold*, highlighting state efforts to curb poaching while urging Malaysians to recognize agarwood’s economic potential. By contrast, *Utusan Malaysia* (18 September 2022) featured *Wangi Dupa sepanjang jalan ke Grafton*, a memoir-like reflection linking agarwood incense to memory, spirituality, and sensory experience during a journey through Auckland. Placed side by side, these accounts underscore the dual framing of agarwood as both economic resource and cultural heritage, yet with limited intersection between the two. This division shapes how agarwood is understood and governed, influencing conservation strategies, cultural policy, and state–community balance.

Limitations and future recommendations

This study has several limitations. It examined only four newspapers and excluded Chinese- and Tamil-language press, which represent important segments of Malaysian society and may frame agarwood differently due to linguistic and cultural positioning (Saleh and Heinrichs, 2020; Zauddin et al., 2017). The analysis focused on textual reporting and did not consider photographs, headlines, or visual elements that may shape representation. Although the dataset covered a broad period, temporal shifts linked to policy changes or market fluctuations were not examined (Bakhtiar et al., 2009). As with all thematic analysis, findings reflect interpretive decisions; team discussions supported rigor and reflexivity. Future research could incorporate Chinese- and Tamil-language newspapers to better capture Malaysia’s multilingual media landscape. Comparative studies across Southeast Asia would also be valuable given agarwood’s regional importance in Indonesia, Thailand, and Vietnam. Expanding analysis beyond newspapers to television, radio, and especially social media may reveal grassroots or community discourses often absent from the traditional press (Zhang and Skoric, 2018). Longitudinal research could further track how representations shift in response to enforcement campaigns, price changes, or conservation initiatives. Future research should examine how newspapers communicate scientific complexity, particularly whether ecological debates are simplified into success narratives.

Conclusion

This study examined how Malaysian newspapers construct meanings around agarwood through qualitative content analysis and reflexive thematic analysis of 267. The findings reveal two dominant framings: English-language coverage foregrounded governance, trade, and enforcement, whereas Malay-language reporting embedded agarwood within religious, cultural, and everyday contexts. Together, these portrayals positioned agarwood either as a regulated commodity vulnerable to illegality or as a heritage resource tied to ritual and identity. These divergent framings carry important implications. Emphasis on enforcement legitimizes state regulation while marginalizing narratives of sustainability, community management, and livelihood rights. Cultural and religious portrayals, by contrast, reinforce agarwood’s symbolic role in social and spiritual life, supporting claims for heritage recognition and protection. More broadly, the findings underscore that media framing not only reflects but actively shapes how

non-timber forest products are governed, valued, and understood within Malaysia and the wider region.

Acknowledgement

This research was supported by the INHART-IIUM Internal Grant 2024 (SPU25-022-0022).

Conflict of interest

The authors declare that the research was conducted without any commercial or financial relationships that could be perceived as a potential conflict of interest.

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