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Young Researchers Programme

UNDERSTANDING INDIGENOUS CONSERVATION BEHAVIOUR AND LIVELIHOODS IN KINABALU UNESCO GLOBAL GEOPARK

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Universiti Malaysia Sabah

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MySDG Centre for Social Inclusion

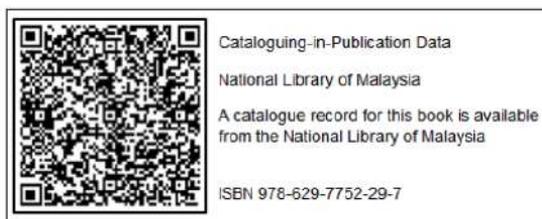
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The APPGM-SDG Case Study Small Grants for Young Researchers Programme empowers researchers under 35 to conduct qualitative research on pressing SDG-related issues in Malaysia. The resulting papers explore challenges affecting left-behind communities, directly supporting APPGM-SDG's grounded, evidence-based research agenda. The grant is offered and managed by APPGM-SDG's policy think tank, MySDG Centre for Social Inclusion.

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ABSTRACT

Although community involvement is widely recognised as crucial for conservation, most research has focused on awareness and participation, with little attention to the behavioural mechanisms in newly designated geoparks such as Kinabalu UNESCO Global Geopark (KUGGp). This study investigates conservation behaviour among indigenous communities in the KUGGp, Sabah, Malaysian Borneo using the Integrative Model of Behaviour Prediction (IMBP). A qualitative design was employed, with eight key informants recruited through purposive and snowball sampling. Semi-structured interviews were analysed thematically using Atlas.ti, deductively guided by IMBP constructs while remaining open to respondent insights. The findings show that conservation behaviour is supported by positive attitudes, strong social norms, and cultural practices such as *gotong-royong* and *Tagal* but constrained by external barriers including crop protection needs and limited financial support. By applying the IMBP in a geopark context, this study helps clarify both the drivers and barriers of indigenous conservation behaviour, extending behavioural theory into a new socio-cultural setting while offering practical insights for geopark management and policy. The results underscore the need for community-centred strategies that strengthen existing practices while addressing structural barriers to conservation.

Keywords: Conservation behaviour, Indigenous communities, Integrative Model of Behaviour Prediction (IMBP), UNESCO Global

Geopark (UGGp), Kinabalu UNESCO Global Geopark (KUGGp), Community-based conservation.

INTRODUCTION

Despite abundant research on community involvement in conservation – from measuring awareness and participation levels to its enabling and hindering factors in protected areas (de los Angeles Somarriba-Chang & Gunnarsdotter, 2012; Htay et al., 2022; Méndez-López et al., 2015) – no studies have investigated these dynamics within the Kinabalu UNESCO Global Geopark (KUGGp). As a newly designated UNESCO Global Geopark for (Sabah Parks, 2024), KUGGp provides a critical case for understanding how conservation behaviour is shaped by both cultural practices and structural constraints among communities. Studying this site not only enriches the existing findings on the drivers and barriers of community participation in conservation but also generates insights that can inform geopark management in designing more comprehensive community-based conservation initiatives.

The relevance of this study is underscored by its connection to the United Nations' 2030 Sustainable Development Goals (SDGs). This sustainability agenda, comprising 17 goals, addresses multiple dimensions of global challenges, including biodiversity conservation. For example, SDG 15 (Life on Land) focuses on protecting and managing how natural resources are used (Krauss, 2022). Another key UN initiative for promoting biodiversity conservation is the designation of areas with significant natural heritage as UNESCO Global Geoparks (UGGp) through UNESCO (Wang & Zouros, 2021). In Malaysia, two sites have been designated as UGGp, namely the Langkawi UNESCO Global Geopark (LUGGp) and the Kinabalu UNESCO Global Geopark (KUGGp), while 2 more sites, the Sarawak Delta Geopark and Lenggong Geopark have received 'green cards' a status

awarded by UNESCO to candidate sites that meet all criteria for Global Geopark designation, and are expected to be officially announced in 2026 (Harian Metro, 2025). To ensure the designated UGGps advance the SDGs, it is essential to understand how communities engage in conservation.

The study site, the KUGGp, is located in the northern part of Borneo. Its significance lies in the local communities' heavy reliance on its surrounding resources for their livelihoods. The involvement of communities in resource management is therefore crucial, since past studies have shown that active participation enhances the success of management plans, particularly in ensuring the sustainable use of natural resources (Alieu, 2010). Communities are central to any management effort, as they are the first to experience the benefits, restrictions, and changes imposed by policies, particularly in natural resource governance. Due to the recent gazettelement of the KUGGp, research focusing on its local communities remain limited (Chan, 2023; Dousin et al., 2024).

Behavioural science research has applied theoretical models like the Theory of Planned Behaviour (TPB) and the Integrative Model of Behaviour Prediction (IMBP) to understand pro-environmental actions (Fauzi et al., 2024; Han & Hyun, 2018; Yadav & Pathak, 2016). While these models have been successfully used in areas such as green behaviour, energy conservation, and health behaviour (Dai & Harrington, 2021; Fauzi et al., 2024), their application to indigenous communities and conservation-related livelihoods remains limited. Addressing this gap is important both theoretically and practically. From a theoretical perspective, this study extends the application of the IMBP into a new socio-cultural setting, contributing to a deeper understanding of conservation behaviour within indigenous communities. Practically, it strengthens the role of UGGp by

highlighting how community engagement can support biodiversity protection while sustaining local livelihoods. At the policy level, the findings provide insights that can inform geopark management strategies and broader rural development initiatives, ensuring that conservation goals are aligned with the well-being of local communities.

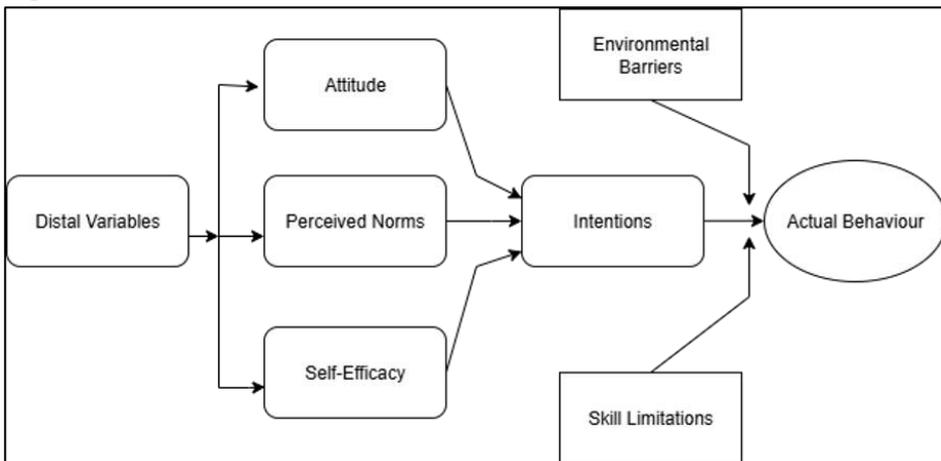
Building on these gaps, this study seeks to investigate indigenous conservation behaviour within the KUGGp guided by the IMBP. The research is structured around three objectives: (1) To examine how community perceptions and awareness towards their surroundings shape conservation commitments; (2) To explore how local values and practices impact their conservation behaviour; and (3) To identify the challenges that hinder communities in practicing conservation behaviour. Together, these objectives address the need for a more nuanced understanding of how consent, practice, and contextual barriers interact in shaping conservation-oriented livelihoods, offering insights that are vital for both behavioural science and the effective management of young geoparks such as KUGGp.

THEORETICAL FRAMEWORK

This study adopts the Integrative Model Behaviour Prediction (IMBP) developed by Fishbein and Yzer (2003) (Figure 1). The IMBP proposes that behaviour is primarily determined by three constructs: attitude, perceived norms, and self-efficacy. A recommended behaviour is most likely to occur when an individual forms a strong intention, provided that external factors such as environmental barriers, contextual constraints, and skills limitations do not hinder action. Unlike earlier models such as the TPB, the IMBP explicitly integrates these external factors, making it particularly relevant for studying conservation behaviour in indigenous communities, where socio-economic and environmental barriers often mediate the link between intention and

action. In this study, the IMBP serves as a guiding framework for both data collection and analysis, enabling a structured examination of how these determinants and external factors influence the conservation behaviour among indigenous communities in the KUGGp.

Figure 1. IMBP Frameworks



RESEARCH METHOD

Research Context

UGGp are designated areas of international geological significance that also hold high ecological value and rich cultural heritage, both tangible and intangible. These parks aim to protect and conserve geological heritage sites while promoting sustainable economic development and the well-being of local communities (Varriale et al., 2022; Wang & Zouros, 2021). In 2023, the KUGGp, a newly gazetted area by UNESCO, was established in North Borneo, Sabah, Malaysia, through the uniting of three districts: Ranau, Kota Marudu, and Kota Belud. The local communities living within the KUGGp are mainly of Kadazan-Dusun ethnicity, each with sub-ethnic divisions (Sabah Parks, 2024) and their main economic activities are highland agriculture, livestock rearing, and tourism. Local livelihoods largely depend on the area's landscape, which supports farming, animal husbandry, and

tourism as key sources of income. Ecotourism is the dominant sector, with Sabah as the biggest receiver of tourists in Malaysia (Danting et al., 2018).

Interview Guides Development and Credibility

The semi-structured interview guide was developed to align with the objectives of this study and grounded in the constructs of IMBP. To ensure credibility, the draft questions were reviewed by experts in environmental sociology from several Malaysian universities. Their feedback was incorporated to refine wording, improve clarity, and confirm that each question was appropriately designed to elicit responses relevant to the study objectives. This process enhanced the methodological rigour of the study by ensuring that the interview guide was both theoretically grounded and practically effective for use with community informants.

Data Collection

This study employed a qualitative research design grounded by IMBP by Fishbein & Yzer (2003), to investigate how local indigenous communities in the KUGGp engage in conservation behaviour and their livelihoods. Participants were recruited through purposive and snowball sampling, targeting community leaders, traditional authorities, district officials, and cultural organisations. In total, eight interviews were conducted between May-August 2025 (Table 1). Semi guided open-ended questions guided by the IMBP framework were used to explore the conservation practices and livelihood strategies, with both written and verbal informed consent obtained from all participants prior to participation. These participants were drawn from several villages within the KUGGp, namely Marak Parak, Lohan-Ulu, Lohan Skim 2, and Takutan as well as the District Office, Native Court and Cultural Organisation to ensure representation across diverse local contexts.

Data Analysis

The interviews were audio-recorded, transcribed verbatim, and uploaded into Atlas.ti version 24 for systematic coding. The data was thematically identified through a deductive approach guided by IMBP. At the same time, the study employed a qualitative thematic analysis technique, following the procedures outlined by Corden and Sainsbury (2006) to ensure a rigorous and transparent interpretation of the data. Protocols on doing thematic analysis are done by following the steps from Scharp and Sanders (2019). Although the coding was initially guided deductively by the construct of IMBP (Attitude, Perceived Norms, and Self-Efficacy), the analysis remained grounded in participants' narratives, allowing inductive insights to emerge. In this way, the theoretical framework functioned as a flexible interpretive lens rather than a rigid template (Miles & Huberman, 2020).

Table 1. Informants involved

PARTICIPANT	GENDER	ROLES	CATEGORY
K1	Male	Village Development and Security Committee (JKKK) Chairman	Local Community
K2	Male	Village Development and Security Committee (JKKK) Chairman	Local Community
K3	Male	Village Development and Security Committee (JKKK) Chairman	Local Community
K4	Male	Chief of state (Ketua Anak Negeri)	Professional
K5	Male	Village Development and Security Committee (JKKK) Chairman	Professional

PARTICIPANT	GENDER	ROLES	CATEGORY
K6	Male	Representative Of the Local District Administration	Professional
K7	Male	Representative From Cultural Organisation	Cultural Organisation
K8	Female	Village Secretary	Local Community

RESULT AND DISCUSSION

The thematic analysis was guided by IMBP. Four major themes were identified based on the framework: Attitude, Perceived Norms, Self-Efficacy, and External Barriers (including environmental barriers and skills limitations). These themes were further refined, which structured the presentation of findings.

Attitude dimension

The analysis revealed that local attitudes towards conservation were strongly shaped by the awareness of their surroundings and a sense of stewardship. This reflects one of the key components of IMBP, where positive attitudes influence behavioural engagement.

Local awareness of surroundings

This highlights how community members recognise their surrounding environments and their location beside the boundary of the protected area. They also acknowledge themselves as pioneer members of these natural heritages and see themselves as stewards responsible for protecting and preserving them. As one informant noted,

Some areas are indeed adjacent to the Geopark, there are also catchment areas, villages and the catchment areas come first, then

the Geopark. So far, there has been no overlap between village land and the park boundaries. (K1)

Others added:

My village is the closest one to Kinabalu Park (K4)

Sabah Parks, or Kinabalu Park, are just right next to us. (K3)

These responses show that the community has a good understanding of their locality and its proximity to Kinabalu Park which is the centre of KUGGp.

Figure 2. Close proximity between a village settlement and the natural environment

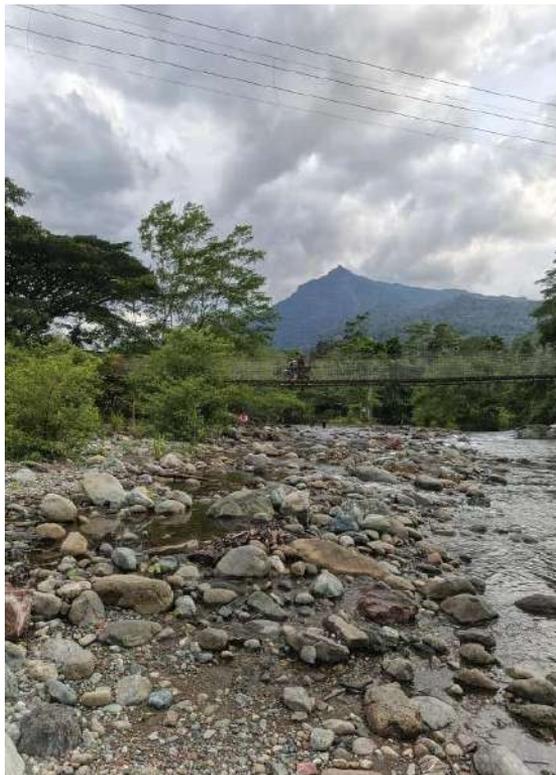


Figure 2 illustrates the close proximity between a village area and the surrounding natural landscape, reflecting how residents live in direct interaction with their environment. Importantly, their awareness of land borders helps to minimise potential conflicts of interest between village settlements and the protected park areas. This indicates that residents of the KUGGp already possess a strong awareness of their natural surroundings. Such awareness provides an essential basis for fostering greater community acceptance of conservation related initiatives and environmental protection efforts. Similar findings were reported by Bassi et al. (2019) in a study conducted in the Julian Prealps Natural Park, Northern Italy which pointed out that it is generally easier for communities to agree with simple general environment related items which in this case is the borders of their village and the protected areas.

Although the Julian Prealps case is situated in Europe, the similarity with the Kinabalu community indicates that this dynamic may be universal across regional boundaries. Furthermore, the general knowledge and awareness demonstrated by the community can also serve as an entry point to open more specific behaviours (Nicolas, 2004).

Sense of stewardship

This theme also recognises how community members show their sense of local pride by expressing their sense of ownership, as noted by one informant:

That is what we are truly proud of. We are among the closest communities there and among the pioneering communities that worked with the Government at that time to establish Kinabalu Park, because those were our roaming grounds before. The

Headquarters itself was a roaming and hunting area for the villagers. (K4)

Another informant also noted that,

We are also part of the Mount Kinabalu World Heritage community. (K5)

This shows that they regard themselves as part of the Mount Kinabalu World Heritage community. In this way, pride in their heritage becomes a foundation for active engagement in conservation and collaboration with the KUGGp. A sense of pride is also demonstrated by the community members who have lived within the Geopark for a long time, where this pride has become a core identity of the people. The connection between the community and the land is rooted in their history which in turn will be expressed through their efforts by protecting and safeguarding the unique physical features of their surroundings (Forsyth et al., 2015), which can strengthen their attachment to place and deepen their sense of responsibility to conserve it for future generations (Alcindor et al., 2021).

At the same time, this pride is further reinforced through formal recognition of their cultural identity, as the UNESCO Global Geopark and World Heritage Site status validates their role as part of a global heritage community. Such acknowledgment strengthens their sense of belonging, and when the cultural identity of the area is preserved and celebrated, the communities' internal bonds grow even stronger, which in turn encourages them to participate more actively in conservation activities (Chng & Narayanan, 2017).

Perceived norms dimension

The analysis revealed that perceived norms play a crucial role in shaping conservation behaviour, demonstrating that the community acts collectively by respecting regulations and awareness of illegal activities such as hunting, reflecting another key element of the IMBP. Social expectations and collective agreement about acceptable conduct strongly guide how people interact with the Geopark.

Respect for regulations

This theme highlights how community members consciously acknowledge the rules and regulations set by the authorities, including Sabah Parks, the Sabah Forest Department, local law enforcement, and native law bodies.

Figure 3. Conservation rule signboard displayed within the KUGGp



Figure 3 shows a signboard displayed at one of the Kinabalu UNESCO Global Geopark sites outlining legal prohibitions under the Sabah Parks Enactment. Such signage reinforces awareness of rules and penalties among local communities.

This aligns between community norms and formal governance that underscores how local compliance supports the wider conservation framework of the Geopark. For instance, one participant explained:

But indeed, there are restricted areas here. They belong to Sabah Parks, so villagers cannot simply enter. If they do, they could even end up in jail. (K8)

Similarly, another informant emphasised the severity of enforcement of native law:

For example, if you trespass into the forest without permission, just going in like that, you could be fined the equivalent of one buffalo. (K4)

These statements show how formal penalties reinforce awareness of boundaries and restrictions. Importantly, the community also demonstrated an in-depth understanding of these rules, as expressed by another participant:

Because once you are in that area, even cutting small pieces of wood is not allowed. So, the villagers understand the rules here. (K1)

Compliance is also maintained through the visible presence of enforcement officers, as one informant noted:

Yes, there are rangers who guard the area. In the past, there were people who went to secretly collect orchids, and they were caught. Even secretly collecting orchids would get you scolded. (K8)

These examples reflect that the community's respect for rules is both externally regulated and internally reinforced, creating a strong foundation for long-term conservation practices within the Kinabalu UNESCO Global Geopark. Community awareness of enforcement regarding restrictions within natural areas is important in shaping more pro-environmental behaviour (Yustitiani et al., 2025). As seen in Cocos Island, Costa Rica, the rate of damage to natural resources was mainly due to the absence of restrictions or cases of over-harvesting, which occurred because of weak enforcement (Arias et al., 2016). Similarly, in Kinabalu, informants recalled an incident in which an individual was caught collecting orchids for personal purposes without a permit where that person was eventually apprehended, and the story spread throughout the village and was noted as a lesson to others.

This clearly demonstrates that community awareness and knowledge of regulations as well as the risks they face if they break them are highly important, in efforts to reduce human interference in ecologically sensitive areas (Baumeister et al., 2001).

Awareness of hunting bans

A second theme reflects the community's strong awareness of hunting bans, which serve as clear behavioural markers for rule compliance. Not hunting demonstrates not only respect for formal regulations but also recognition of the ecological importance of wildlife. One participant explained:

The safety of animals here is indeed a basic rule in the Geopark, and the local community are already well aware that they should not be in those areas, let alone hunting. (K1)

This shows that the community's understanding goes beyond simple avoidance of penalties, extending into thinking of protecting fauna as part of their natural heritage. Some informants also highlighted the active presence of enforcement, with one informant stating,

Hunting is not allowed. That is why the margastua (Sabah Wildlife Department enforcement) is also around here. Those who have a bakakuk (a type of firearm used for hunting) are also being tracked by the police. (K2)

This reflects how institutional monitoring works together with local knowledge to reinforce compliance. Interestingly, even species like wild boar, which are often viewed as pests, are mentioned as being under protection. As one participant noted with humour,

Yes, all the animals are protected they said, even wild boars are protected (laughs), even though wild boars breed quickly anyway. (K1)

This suggests that the community's compliance with hunting restrictions is shaped mainly by the actions taken by law enforcement, alongside their knowledge of wildlife status. It reflects a strong synergy between the externalisation and internalisation of conservation values. Similar patterns have been observed in Kazakhstan, where a study showed that hunters were able to fully cooperate with introduced hunting regulations. However, to ensure a more sustainable policy on wildlife protection, enforcement and knowledge need to be integrated within the community in parallel (Jones et al.,

2022). This would help foster pro-environmental behaviour not only because of external pressure but also due to internal drivers, such as awareness of the threats faced by certain species, which is equally important (Maurer et al., 2021). Overall, the community's restraint from hunting shows how formal rules and cultural understandings reinforce one another, embedding conservation norms within everyday life in the KUGGp.

Self-efficacy dimension

The analysis revealed that self-efficacy within the community plays a vital role in shaping conservation behaviour. In the IMBP framework, self-efficacy refers to the confidence and perceived ability to carry out certain actions. Here, it is reflected through village-led conservation such as the practice of *gotong-royong* (communal cleaning) and *Tagal* system that demonstrate both collective responsibility and proactive environmental management.

Gotong-royong practices

This theme highlights how community members actively engage in conservation through village-led practices that combine both tradition and collective responsibility. One of the most common expressions of this is the practice of *gotong-royong*, where villagers come together to maintain cleanliness and order in their surroundings. These communal efforts, carried out regularly throughout the year, include cleaning graveyards, tidying the village, and responding to special events or needs. As one participant explained,

Yes, the program has been here for a long time, where we hold gotong-royong once a month, or if necessary, once every two months. In total about six to eight times a year, everyone in the village will join in. (K1)

Another informant added,

Usually just gotong-royong for the graveyard, to clean the village, that's it. (K2)

A third highlighted the obligatory nature of such actions,

Around four times a year, that is mandatory. For other events, special gotong-royong depends on the need. (K5)

These practices not only maintain the physical environment but also reinforce social cohesion, strengthening collective responsibility towards the village and its natural surroundings. *Gotong-royong* are viewed as a very important collective act by the communities, bringing benefit especially to the landscape of their village especially for those who live around sensitive natural surroundings. This is because poor environmental hygiene in villages can have severe consequences for the natural environment that can lead to the contamination of natural resources, affecting biodiversity and ecosystem health (Ansari & Matondkar, 2014). Maintaining proper sanitation is very important, especially because most of the observed villages have nearby water bodies that are vulnerable to contamination. A case study from Palembang City, Indonesia, showed that the gotong-royong program provides a model for local communities to engage in pro-environmental living and reduce the risk of human-caused disasters such as floods (Sandy et al., 2021).

Tagal initiatives

Another significant village-led initiative is the practice of *Tagal*, a customary system of managing rivers and forests by enforcing restrictions on resource use that are unique and only exclusively applied in Sabah, Malaysia Borneo where the KUGGp is located.

Through *Tagal*, communities regulate access to certain areas, ensuring that overexploitation does not occur and that ecological balance is maintained.

Figure 4. Signboard indicating a fishing prohibition at a *Tagal* river in the KUGGp



Figure 4. Signboard indicating a *Tagal* area in Kota Marudu District, Kinabalu UNESCO Global Geopark (KUGGp). Fishing is prohibited under community-enforced *Tagal* rules as part of local customary conservation practices.

One informant described,

We also have Tagal, apart from recreation. (K1)

while another elaborated,

In my village, we might be the only ones that have this practice; for example, we have one forest under Tagal. (K4)

Similarly, another noted,

In Bundu Tuhan, our river is under Tagal, the forest too. Whoever cuts trees without permission will be fined. (K4)

These testimonies reflect how traditional ecological knowledge is practiced at the village level, combining customary law with conservation practices, and ensuring that the benefits of natural resources are shared sustainably across the community (Foo et al., 2022). The *Tagal* system, a unique method of protecting fish populations, was initially focused on river and fish conservation. However, this research has found a village that extended this method to the forest as well, with the same objective of protecting the flora and fauna inhabiting the area. Beyond collective traditions, some communities also initiated their own conservation programs at the village level. These efforts demonstrate a proactive commitment to environmental stewardship, often addressing local needs and challenges directly. One participant proudly stated,

In our village, we are very grateful because we have our own program for tree planting in bare places. Even though it is within the village, we encourage villagers to plant trees. (K4)

Such grassroots initiatives highlight how conservation is not only externally imposed through formal governance but also driven from within by community awareness and pride. This system demonstrates that the community is able to organise and manage its own initiatives

in support of the UNESCO Global Geopark agenda of protecting living organisms within it. Another example from west Kalimantan, Indonesia also shows that community-led, self-managed conservation initiatives that align with broader conservation agendas can generate promising and positive outcomes in terms of ecological sustainability, community empowerment, and long-term stewardship (Miller et al., 2020).

External challenges

This theme highlights the practical and structural challenges faced by communities living adjacent to the Geopark. While they show strong awareness and commitment to conservation, several factors hinder their ability to fully align with conservation objectives. These challenges, which include hunting to protect crops and financial limitations, reflect the complex realities of balancing livelihoods with environmental stewardship.

Hunting to protect crops

One of the most pressing issues raised by community members is the conflict between agricultural livelihoods and wildlife presence. Although hunting for sport or consumption is less or not practiced anymore, some villagers feel compelled to set traps to safeguard their crops from wild animals. As one informant shared,

If there are animals disturbing the crops, we are forced to set traps to prevent wild animals from entering the farms. (K1)

Another added,

So, when it comes to hunting, hunting just for the sake of it (personal benefits) is rare, but if it is to protect crops, then some villagers are forced to set up snares, that is how it is. (K1)

This demonstrates how living needs and protection of harvests sometimes create tensions with conservation goals, where conservation rules can clash with local livelihoods. This phenomenon is referred to as human-wildlife conflict, which is already common and predictable, especially for communities living near natural habitats. As seen in other areas, conflicts between humans and animals have been shown not only to cause financial losses to the parties involved (Baral et al., 2021; Dahal et al., 2022), but also, at times, to result in tragedies leading to the loss of life of human or the animals themselves (Muringai et al., 2025; Pant et al., 2023).

Limited financial support

Another key challenge relates to limited financial support. Informants highlighted the lack of specific incentives or relief targeted towards environmental efforts. For example, when asked about financial aid, one informant explained,

There is aid from the government, but not specifically for the environment. (K1)

This indicates that while general forms of assistance may exist, there is little direct support for conservation-related activities. Such financial constraints reduce the community's ability to undertake sustainable practices independently and may limit their long-term engagement in conservation programs. This is a very important issue to be addressed, because community-level conservation programs or incentives are often very difficult to implement when financial constraints arise, whether in covering operational costs or in providing incentives for participants (Humavindu & Stage, 2015). Incentive schemes are often discouraged as a means of ensuring long-term conservation sustainability, as communities may act solely for financial reward. This is exemplified by a community-based ecotourism programme in

Sumatera, Indonesia, which failed to produce results and worsened local conditions after its funding was discontinued (Erbaugh, 2022). Financial assistance nevertheless plays a crucial role, particularly for communities that remain highly dependent on natural resources for their livelihoods. While such funds cannot be sustained indefinitely, they can at least provide temporary support until communities become more well-established.

CONCLUSION, CAVEATS AND POLICY IMPLICATIONS

In conclusion, this study shows that conservation behaviour of the KUGGp indigenous community is shaped not only by positive attitudes, perceived norms, and self-efficacy but is also constrained by external barriers that limit action. Contrary to the assumption that indigenous communities need more awareness programmes, their conservation practices are deeply embedded to their proximity with sensitive ecosystems such as Kinabalu Park. The KUGGp indigenous community demonstrates conservation behaviour in their daily lives through active involvement in self-administered practices, such as *gotong-royong*, the customary preservation of freshwater fish via the *Tagal* system, and self-initiated tree rehabilitation.

On the other hand, the community faces external constraints, including threats to their source of income and limited financial support. By framing these findings through the IMBP model, this study clarifies the key drivers and inhibitors of conservation, offering a more precise understanding of how commitment emerges within the KUGGp's indigenous communities.

While this study provides a valuable insight into community-based conservation behaviour, several limitations should be acknowledged. First, the reliance on the face-to-face semi-guided interview approach limits the breadth and generalisability of the findings. This means the

approach is capable of exploring the conservation behaviour of the KUGGp community only. Combining this with surveys or secondary data can help to capture a more comprehensive picture of the community. Next, while the application of the IMBP model helps to clarify the key drivers and barriers to conservation behaviour, the analysis is limited to the framework's dimensions and cannot address other structural factors such as political, economic and historical, that may also influence the community's practices. Finally, the qualitative approach effectively highlighted the key themes and relationships shaping community behaviour. While it does not aim to test statistical relationships, it provides rich contextual insights that help explain the underlying barriers faced by the community. Future quantitative analyses could complement these findings by identifying which barriers significantly influence communities' conservation behaviour.

Consequently, evidence-based approaches must be adopted by all stakeholders. Government agencies like Sabah Parks, which manages the Kinabalu protected area, and other stakeholders like CSOs and NGOs should leverage these approaches to foster indigenous community involvement in conservation, thereby positively shaping behaviour. However, the approach must go beyond superficial, one-off campaigns like programme opening ceremonies, where communities are involved but granted no real authority, as these efforts leave no lasting impact on conservation management, especially in protected and managed areas like the KUGGp. Instead, programmes should integrate indigenous knowledge and skills into the authorities' management planning as traditional ecological knowledge can guide the development of more effective and sustainable policies. At the same time, this approach ensures fairness to the community by respecting cultural practices and livelihoods.

These recommendations align with SDG 15 (Life on Land), which calls for the protection, restoration, and sustainable use of terrestrial ecosystems. Indigenous communities within the KUGGp already embody this goal through everyday practices that sustain biodiversity while preserving cultural identity. Achieving SDG 15 in Malaysia therefore depends not on transforming community behaviour but on transforming institutional behaviour shifting from policy frameworks that instruct conservation to those that enable it.

STATEMENTS AND DECLARATIONS

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Compliance with Ethical Standards

This study was approved by the Universiti Malaysia Sabah Ethics Committee for Research Involving Human Subjects (Approval Code: JK2/25 (26); Reference Number: UMS/FPSK6.9/100-6/1/95/) and a research permit from Sabah Parks (Reference code:SPRP-327). Prior to agreeing to take part in this study, participants were provided with an information sheet detailing the purpose and methodology of the research, its potential benefits, possible risks or complications, and assurances of confidentiality. Written informed consent was obtained

from all participants for both their participation and the publication of the findings. Each participant voluntarily signed a consent form after being fully informed about the study.

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Although community involvement is widely recognised as crucial for conservation, most research has focused on awareness and participation, with little attention to the behavioural mechanisms in newly designated geoparks such as Kinabalu UNESCO Global Geopark (KUGGp). This study investigates conservation behaviour among indigenous communities in the KUGGp, Sabah, Malaysian Borneo using the Integrative Model of Behaviour Prediction (IMBP). A qualitative design was employed, with eight key informants recruited through purposive and snowball sampling. Semi-structured interviews were analysed thematically using Atlas.ti, deductively guided by IMBP constructs while remaining open to respondent insights. The findings show that conservation behaviour is supported by positive attitudes, strong social norms, and cultural practices such as gotong-royong and Tagal but constrained by external barriers including crop protection needs and limited financial support. By applying the IMBP in a geopark context, this study helps clarify both the drivers and barriers of indigenous conservation behaviour, extending behavioural theory into a new socio-cultural setting while offering practical insights for geopark management and policy. The results underscore the need for community-centred strategies that strengthen existing practices while addressing structural barriers to conservation.

About the Author

Mohd Shafiq Hassan is an MSc student in Nature Tourism at the Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah. His research focuses on biodiversity conservation, human-nature interactions, and the Sustainable Development Goals, with an emphasis on community-based conservation behaviour among communities in ecologically significant landscapes.

About APPGM-SDG Case Study Small Grants for Young Researchers Programme

This programme empowers researchers under 35 to conduct qualitative research on pressing SDG-related issues in Malaysia. The resulting papers explore challenges affecting left-behind communities, directly supporting APPGM-SDG's grounded, evidence-based research agenda. The grant is offered and managed by APPGM-SDG's policy think tank, MySDG Centre for Social Inclusion.



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