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CHAPTER 3

Indigenous knowledge on conservation

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Abstract: Indigenous knowledge (IK) is deeply rooted in the intergenerational practices, customary laws, spiritual beliefs and connections to ancestral territories. These knowledge systems shape how the Indigenous communities interact with their surrounding environments and natural resources. This chapter explores the principles Indigenous-led conservation practices, such as the *Tagal* or *Bombon* system of fisheries management, the *Tovol* system of customary forest resource regulation, the *Sogindai* and *Sogian* traditional zoning practices, and the *Turugan* rotational farming system. However, these practices are facing growing threats from insecure customary land rights, development pressures, exclusionary conservation policies and erosion of traditional knowledges. Upholding the Free, Prior and Informed Consent (FPIC) and recognising Indigenous Community Conserved Areas (ICCAs) are important in safeguarding Indigenous communities and their traditional knowledge.

INTRODUCTION

The Indigenous Peoples of Malaysia, collectively known as Orang Asal, comprise approximately 3.7 million people, representing about 13.8% of the national population. They are broadly categorised into three regions. In Peninsular Malaysia, they are known as the Orang Asli and consist of 18 sub-ethnic groups, including the Negrito, Senoi, and Proto-Malay. In Sarawak, they are referred to as Orang Ulu or Dayak, encompassing around 28 groups such as the Iban, Bidayuh, Kenyah, Kayan, and Penan. In Sabah, they are recognised as Natives or Anak Negeri, made up of 39 distinct groups, including the Kadazandusun, Murut, Bajau, Rungus, and Orang Sungai. Legally, the Federal Constitution refers to Indigenous Peoples in the Peninsula as "aborigines" and those in Sabah and Sarawak as "natives." Despite these differing labels, they share deep historical, spiritual, and cultural connections to their ancestral lands and natural resources.

Indigenous knowledge

Indigenous knowledge (IK), also referred to as Traditional Ecological Knowledge (TEK), is a collective, intergenerational system of wisdom rooted in direct experience and spiritual values. Rather than being a collection of abstract facts, IK is a way of life encoded in oral traditions, rituals, and lived practices that guide how a community interacts with its ancestral territory.

At the core of Indigenous knowledge systems is the principle of interconnectedness, where humans, nature, and the spiritual realm are understood as deeply and inseparably linked, both physically and spiritually. This worldview shapes how communities relate to their environment, emphasising balance, respect, and responsibility in all interactions with the natural world. One key expression of this philosophy is *Gompi-Guno* (Use and Protect), a guiding principle especially prominent in Sabah. It reflects the belief that natural resources are gifts that must be used according to need while being carefully protected for future generations. This approach promotes restraint, stewardship, and long-term sustainability rather than exploitation.

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Spiritual governance also plays a central role in regulating human behaviour. Many Indigenous communities believe that elements of the natural environment, such as rocks, trees, and water sources, are inhabited by spiritual guardians known as *Moinat* or *Penjaga*. This belief creates a form of "sacred geography," where specific places are governed by taboos and customary rules to ensure respect and harmony. These practices help maintain what is understood as cosmic balance, often referred to as *Osogit*.

Within this system, consequences are closely tied to actions. Mismanagement of resources or disrespect toward nature is believed to result in *Ohusian*, which may manifest as misfortune, illness, or natural disturbances. This belief functions as an internal regulatory mechanism, reinforcing sustainable practices and encouraging individuals and communities to act responsibly toward the environment.

Indigenous knowledge forms the backbone of ICCAs (Territories and Areas Conserved by Indigenous Peoples and Local Communities), often referred to as "territories of life." This is also reflected in the Kunming-Montreal Global Biodiversity Framework, which emphasises respect for Indigenous rights. Specifically, Target 3 requires that all actions taken to protect 30% of the world's land and sea must respect the rights of Indigenous Peoples and local communities over their traditional territories. In Malaysia, these are categorised by three pillars: a deep connection to the territory, community-led governance power, and positive conservation outcomes. Examples include the Bundu Tuhan Native Reserve, where 60% of the land is a community-managed forest, and the Kiau Community Forest, governed by the GOMPITO organisation to protect traditional knowledge and biodiversity.

ICCAs or territories of life are not limited to the settlement or village area only. It is only one part of this system. Surrounding it are forest areas that provide essential resources such as medicine, wild food, and materials for daily use, while also holding sacred sites that are protected through cultural beliefs and practices. These forests are not just physical spaces, but spiritual landscapes that are respected and carefully managed.

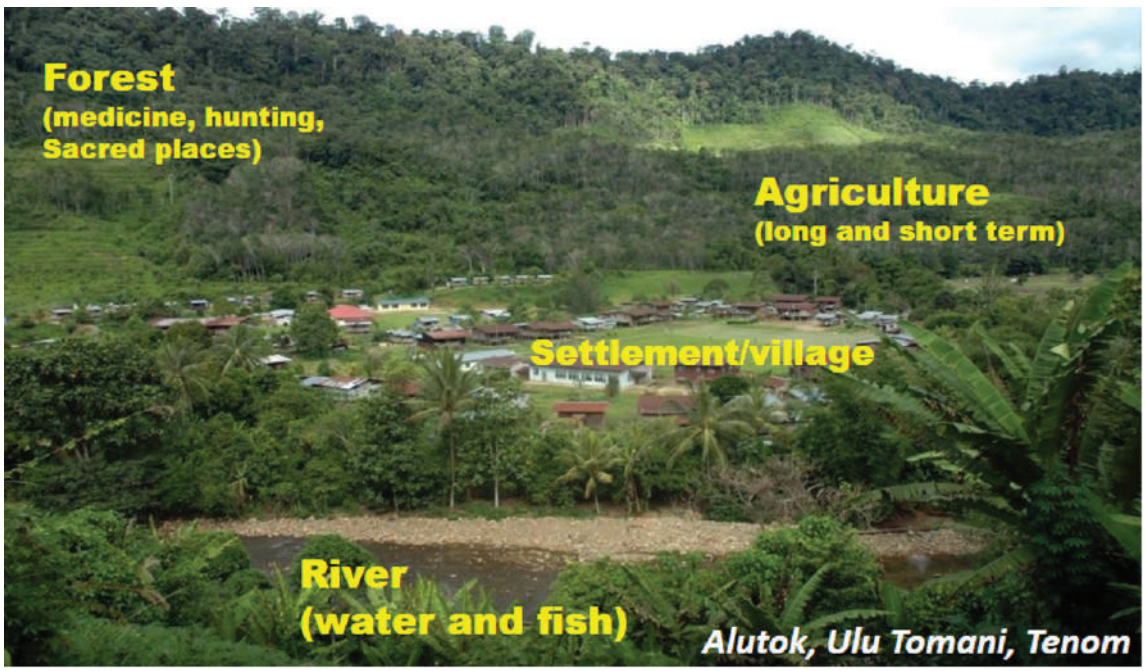

Figure 1. The way Indigenous Peoples see their traditional territories, which consist of forest, river and agriculture area.

Agricultural areas extend beyond the village and include both long-term and short-term land use. Long-term crops such as rubber and fruit trees contribute to livelihoods over many years, while short-term practices like rotational farming support the cultivation of rice and other food crops. This shifting cultivation system allows the land to rest and regenerate, maintaining soil fertility and ecological balance.

Water bodies, such as the river shown in the foreground, are equally vital. They provide water for daily use and serve as an important source of protein through fishing. In coastal areas, similar roles are played by mangroves and the ocean. Altogether, this landscape reflects a holistic view of territory where forests, farms, rivers, and settlements are interconnected and collectively sustain the community's survival, culture, and identity.

THE ROLE OF INDIGENOUS KNOWLEDGE IN INDIGENOUS PRACTICES AND LIVELIHOODS

In daily life, IK underpins survival and self-reliance across multiple dimensions. In many Sabahan communities, for example, the concept of consent extends beyond social agreement to include spiritual permission. Communities such as the Sungai and Tombonuo perform rituals like *Etus*, *Mamason*, and *Mamatang* to seek approval or consent from both the community and *Moinat* or *Penjaga* (spiritual guardians). Sustainable resource use is guided by principles such as *Gompi-Guno* (use and protect), ensuring that natural resources are utilised responsibly while being conserved for future generations. Traditional healthcare systems, led by healers like the Bobolians, rely on deep knowledge of herbal medicine to treat illness and restore balance. Agricultural practices are guided by lunar phases and environmental indicators, supporting *Turugan* (rotational farming systems) that maintain soil fertility through fallow periods of 7 – 10 years. Social governance is embedded in *Adat* (customary law), with mechanisms such as *Sogit* (compensation) used to restore harmony when rules are broken.

Nature itself serves as a key indicator within IK systems. Many communities rely on the phases of the moon to determine optimal planting periods that reduce pests and disease. Among the Murut Tahol, the chirping of the *Kongkongkaput* (Indian Cuckoo) signals the beginning of the fruiting season; the frequency and intensity of its calls are believed to indicate the abundance of fruit harvests.

Cultural-based solution in conservation

Indigenous conservation practices are deeply rooted in cultural systems. The *Tagal* or *Bombon* system is a well-known community-based fisheries management approach where certain river zones are declared off-limits to fishing, allowing fish populations to recover. Similarly, the *Tavol* system practiced by the Murut Tahol restricts resource collection in designated forest areas to ensure sufficient resources for cultural ceremonies.

Traditional zoning systems such as *Sogindai* and *Sogian* further illustrate Indigenous conservation strategies. *Sogindai* areas are strictly protected zones, often due to spiritual, ecological, or historical significance, such as primary watersheds or sacred groves. These areas function as biodiversity refuges and are preserved through strict customary rules. In contrast, *Sogian* areas are communal use zones managed collectively under *Adat*, where controlled activities like hunting, gathering, and small-scale farming are allowed under strict guidelines.

Table 1. Functional zones based on customary governance.

Area	Classification	Description
Sogindai	Strictly Protected	"No-go" areas for spiritual or ecological reasons (e.g., watersheds, burial grounds). Access is often forbidden under *Adat*.
Sogian	Communal Use	Areas managed for hunting, foraging, and logging. Governed by strict protocols to prevent "open-access" depletion.

Traditional agriculture cycle often referred to as *Turugan* or rotational farming, is a sustainable system practiced by Indigenous communities that stands in contrast to modern monocultures. This method involves small-scale farming followed by long fallow periods frequently spanning 7 – 10 years to allow soil fertility and ecosystem health to recover naturally. Within this cycle, hill rice fields are assigned specific names that correspond to their current stage of cultivation or regeneration.

Table 2. Stages of rotational farming for Dusunic, Murutic and Paitanic Indigenous groups.

Stage	Dusunic	Murutic	Paitanic
Active Cultivation	*Tumo*	*Umo*	*Umo*
Early Fallow (1–5 years)	*Tomulok*	*Amug / Naumoh*	*Repa*
Late Fallow (5–10 years)	*Kapanggor*	*Katanaan*	*Nokakas*

A prominent example of Indigenous conservation in Sabah is the *Tagal* system, which demonstrates effective community-led river management. Under this system, communities designate sections of rivers as no-fishing zones for a set period, allowing fish populations to regenerate. This approach has proven highly successful in restoring fish stocks and ensuring long-term food security. Its effectiveness led to formal recognition under the *Sabah Inland Fisheries and Aquaculture Enactment 2003*, although its strength continues to depend on community governance and adherence to *Adat*.

Another important case is the *Tavol* system practiced in areas such as Alutok by the Murut Tahol community. *Tavol* regulates access to forest resources within *Iningaan Mai* (customary territories) to ensure sustainability and support important cultural events. Its implementation requires community consensus and is often linked to ceremonies such as weddings or mourning rituals. Enforcement is strict, with violations resulting in *Sogit* (customary penalties), reflecting the seriousness of maintaining ecological and social balance.

KEY CHALLENGES

Indigenous Peoples in Sabah face a complex and interrelated set of systemic, legal, and environmental challenges that continue to undermine their traditional conservation practices and threaten their ancestral territories. These challenges are not isolated; rather, they are deeply interconnected, ranging from legal invisibility and external development pressures to the gradual erosion of IK systems.

One of the most critical issues is the lack of formal legal recognition of Native Customary Rights (NCR) to land and resources. Existing statutory frameworks, many of which are rooted in colonial-era policies, often fail to reflect the realities of Indigenous land use and management. For example, the *Sabah Land Ordinance* defines land ownership

based on continuous cultivation, which excludes traditional rotational farming practices such as hill rice cultivation that involve fallow periods of 3 –10 years. As a result, these lands are often not recognised as being actively used. In addition, the administrative process for claiming NCR is typically long, costly, and complex, with communities facing delays and limited transparency. Even when court rulings favor Indigenous claims, these decisions are not always consistently implemented at the administrative level, further weakening land tenure security.

At the same time, Indigenous territories are increasingly subjected to what is often described as "development aggression." Large-scale economic activities such as logging, mining, and industrial plantations including oil palm, rubber, and acacia have replaced extensive areas of biodiverse rainforest, resulting in environmental degradation and loss of customary lands. Infrastructure projects also pose serious threats; for instance, the proposed Kaiduan or Papar Dam risks displacing entire communities while destroying sacred sites and vital ecosystems. In coastal and riverine areas, large-scale aquaculture activities such as shrimp farming in places like Sungai Eloi, Pitas have led to the destruction of thousands of acres of mangrove forests, directly impacting the livelihoods and food systems of communities in the area.

Conflicts also arise from state-led conservation approaches, often referred to as "fortress conservation," which historically exclude Indigenous Peoples from decision-making processes. When areas are designated as Forest Reserves or Protected parks, traditional practices such as hunting, gathering, and small-scale farming are frequently prohibited. In some cases, communities have reported enforcement actions that include the destruction of homes and crops for allegedly encroaching on land that they have inhabited for generations. Additionally, many ICCAs overlap with state-designated protected areas without obtaining Free, Prior and Informed Consent (FPIC) from the communities. While mechanisms such as Community Use Zones (CUZ) exist, they are often limited in scope and do not adequately accommodate traditional subsistence activities.

Another major challenge is the erosion of IK and TEK. This knowledge is increasingly at risk due to multiple modern pressures. Formal education systems tend to prioritise standardised curricula that exclude traditional skills and knowledge, while younger generations often migrate to urban areas for employment, creating a gap in knowledge transmission between elders and youth. Social stigma also plays a role, as traditional beliefs and practices such as Momolianism are sometimes dismissed as outdated or unscientific. Furthermore, environmental degradation contributes directly to knowledge loss, as the plants, animals, and ecosystems that form the basis of traditional medicine and cultural practices disappear.

Governance challenges, particularly related to FPIC, further compound these issues. In many cases, governments and private sector actors fail to conduct meaningful consultations with Indigenous communities before initiating projects on their lands. When consultations do occur, they are often limited to selected or government-appointed leaders who may not fully represent the broader community. At the same time, state control over the appointment of traditional leaders can weaken customary governance systems, reducing leaders' independence and shifting their role away from being custodians of Adat toward acting as intermediaries for government interests.

Finally, Indigenous communities face growing economic and climate-related vulnerabilities. The increasing reliance on a cash-based economy places pressure on communities to shift from sustainable subsistence practices toward commercial monoculture, which can lead to overexploitation of natural resources and long-term financial instability. Climate change further intensifies these challenges, as unpredictable weather patterns

including floods, droughts, and shifting seasons disrupt agricultural cycles, reduce crop yields, and threaten overall food security. Together, these pressures create a highly uncertain environment for Indigenous communities striving to maintain their traditional ways of life and conservation practices.

RECOMMENDATIONS AND THE WAY FORWARD

Indigenous Peoples in Malaysia and across the broader Asian region emphasise the need to secure legal recognition of their rights, adopt a human rights-based approach to conservation, and ensure that IK is passed down effectively across generations. These priorities reflect a holistic vision where environmental sustainability, cultural continuity, and social justice are closely interconnected.

A key priority is legal and institutional reform to formally recognise the distinct status and rights of Indigenous Peoples. This includes the establishment of an independent National Commission on Indigenous Peoples (NCIP) to advise governments, monitor development activities on Indigenous lands, and safeguard fundamental rights. There is also a strong call for constitutional and legislative reforms to recognise Indigenous customary land rights as fundamental rights, ensuring that laws such as the *Sabah Land Ordinance* and *Sarawak Land Code* are aligned with Indigenous concepts of land use, including territorial domains and foraging areas. In addition, judicial reforms are needed, such as the creation of a specialised Indigenous Land Tribunal or Native Title Court to address land disputes more efficiently, with judges who are knowledgeable about local customs and traditions.

Equally important is the implementation of a human rights-based approach in both conservation and development. This approach requires a shift away from top-down decision -making toward inclusive systems that treat Indigenous Peoples as equal partners. Central to this is the legal enforcement of FPIC for any project affecting Indigenous territories. Conservation efforts should also adopt a more inclusive "whole-of-society" framework that recognises Indigenous lands as legitimate and effective conservation areas alongside state-designated protected areas. At the same time, governments must ensure the protection of environmental defenders, safeguarding them from harassment, discrimination, and criminalisation.

Strengthening customary governance systems and supporting ICCAs is another critical step. Community-led conservation plays a vital role in maintaining biodiversity and cultural identity. Recognising ICCAs through frameworks such as Other Effective Area-based Conservation Measures (OECMs) can provide legal support without forcing communities into state-controlled models. It is also important to support communities in developing and documenting their own protocols, which articulate their values, rules, and stewardship practices to external stakeholders. Empowering traditional leaders, including figures such as Bobolians, Batins, and village chiefs, is essential to ensure that customary laws continue to guide conservation and resource management.

In terms of conservation and resource management practices, government policies need to shift toward supporting, rather than penalising, traditional livelihoods. Rotational farming, often misunderstood as inefficient, should be recognised as a sustainable agroforestry system that contributes to biodiversity conservation and carbon storage. There is also a need to implement genuine co-management arrangements in protected areas, allowing Indigenous Peoples to participate meaningfully in decision-making while maintaining access to resources for sustainable use. Furthermore, investing in research to document and validate traditional practices, such as the *Tagal* river management system, can help integrate Indigenous approaches into formal policy frameworks.

Ensuring the intergenerational transfer of knowledge is crucial to sustaining Indigenous cultures and conservation systems. Education systems should be reformed to include Indigenous knowledge, languages, and cultural practices, particularly in rural and Indigenous communities. Community Learning Centres can serve as important spaces where elders share knowledge on traditional medicine, crafts, and oral traditions such as ritual poetry with younger generations. In addition, digital tools and social media platforms offer new opportunities to engage youth and promote the relevance of traditional knowledge in contemporary contexts.

Finally, accountability and redress mechanisms must be strengthened to address historical and ongoing injustices. This includes establishing legal provisions for the restitution of lands that were taken without consent, or providing fair compensation and alternative land where restitution is not possible. Robust monitoring systems, led by rights-holders themselves, are also essential to assess the impacts of conservation and development initiatives on Indigenous communities, ensuring that their rights, well-being, and environmental stewardship are fully respected.