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**The Implications of Protected Areas
on Land and Resource Use Rights:
A Case Study in Inlay Lake Wildlife Sanctuary, Myanmar**

**MYAT SU MON and
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Working Paper Series (2025/08)



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Abstract

Protected areas are widely recognized as one of the most effective tools for biodiversity and ecosystem conservation, however, ineffective management can impose significant social costs, particularly on communities that rely on natural resources for their livelihoods. This study investigates the dynamics of land and resource use rights, conflicts, and community perceptions in the management of the Inlay Lake Wildlife Sanctuary (ILWS), focusing on the tension between conservation priorities and local livelihood needs. Through a qualitative approach, including direct observations, key informant interviews (KII), and individual household interviews (IHH), the study reveals conflicts arising from unclear land tenure, restricted resource use, and poor communication between management authorities in the lake and local communities. While conservation efforts have contributed to increased ecosystem goods, restrictions on traditional practices such as extension of floating gardens and fishing have created significant livelihood challenges for local communities especially due to the failure of ecotourism after Covid-19 pandemic. Key findings include a lack of formal land use certificates, inadequate participation in conservation planning, and limited access to information about the sanctuary's management and regulations. The study argues that land and resource use rights of the Intha community are undermined by poor participatory management of the wildlife sanctuary and lack of adaptive management in response to community livelihood needs. Recommendations include enhancing community involvement in PA governance, improving communication channels, formalizing land tenure, acknowledging customary rights, and providing sustainable livelihood support programs. By aligning conservation goals with community interests and rights, both ecological and socio-economic benefits can be achieved.

Keywords: Protected areas, Land and resource use rights, Conflicts, Procedural rights, Community perceptions

Introduction

Protected areas (PAs) are recognized as among the most effective tools for biodiversity conservation worldwide, safeguarding ecosystem services and cultural resources (IUCN, 2008). When managed effectively and equitably, PAs contribute to improved livelihoods, sustainable development, and the protection of indigenous rights and community well-being. However, their establishment and management often result in social costs for local communities. In response to these challenges, a paradigm shift in PA governance emerged at the 2003 World Parks Congress in Durban, advocating for a more inclusive and rights-based approach (IUCN, 2003). Despite this shift, indigenous people and local communities still bear the highest costs associated with PAs, facing restricted land and resource access. These restrictions can lead to conflicts, resistance, and reduced cooperation, ultimately undermining conservation efforts (Springer & Almeida, 2015). Myanmar is recognized as a global biodiversity hotspot, with PAs serving as critical conservation instruments. The country has committed to expanding its PA coverage to 10% of its total land area by 2030 as part of its 30-year National Forestry Master Plan. As of 2025 February, Myanmar has designated sixty-two PAs. However, PA management is frequently characterized by strict regulations that curtail local land and resource use rights, often leading to conflicts with local communities. According to the Conservation of Biodiversity and Protected Areas Law (2018), core zones within PAs are not allowed for local resource use, allowing limited activities only in buffer zones. However, encroachment remains a pressing issue, raising concerns about whether buffer zones alone can adequately support local livelihoods (Robinson et al., 2013; Stræde & Treue, 2006). Without proper designation and management of buffer zones through inclusive consultations, conflicts arise, exacerbated by population growth, political instability, and economic pressures.

As Myanmar continues to expand its network of PAs, conflicts stemming from competing land and resource claims are becoming increasingly complex. Despite legal provisions allowing for the establishment of Community Conserved Protected Areas, most PAs still lack community-driven management frameworks. Addressing these challenges requires acknowledging and incorporating the customary tenure, resource use patterns, demographic realities, and traditional ecological knowledge of local communities. In 2022, countries agree to address biodiversity loss by conserving at least 30% of land and water by 2030, which is referred to as the 30x30 target. The Global Biodiversity Framework (GBF), formally adopted

at the 2022 UN Biodiversity Conference (COP15), explicitly highlights the importance of recognizing and respecting the rights of Indigenous Peoples and local communities (IPLCs) and emphasizes equity and effective participation conservation decision making in achieving the 30x30 target (UN) (CBD, 2020). Myanmar National Land Use Policy (2016) recognizes the land use rights of the ethnic nationalities by emphasizing recognition, protection, and formal registration of customary land tenure for ethnic nationalities, ensuring their participation in land governance, dispute resolution, and decision-making while providing technical, financial, and legal support to enhance tenure security, safeguard traditional practices, and facilitate the resettlement of displaced communities in accordance with international standards.

Conflicts concerning protected areas and local communities still persist in Myanmar, as in many other developing countries. In cases where consultation with local stakeholders has been inadequate, PAs impose restrictions on land and resource access, disrupting traditional livelihoods and exacerbating tensions. Understanding local perceptions of PAs is crucial for developing conservation strategies that balance ecological and social objectives. This study aims to examine the land and resource use conflicts that influence local people's perceptions towards the PA, to explore how the rights of the local people are affected by the PA, and to assess how and to what extent the land and resource use rights of the local community are taken into account in the PA management and to formulate applicable management interventions to reduce conflicts.

ILWS presents an ideal case for this study due to its complex socio-ecological landscape. The lake sustains diverse ethnic communities, including the Intha, Pa-O, Taungyoe, Danu, and Kayan, whose traditional livelihoods revolve around fishing, farming, and tourism-related activities. The competing interests of government agencies, local communities, and private tourism operators further complicate governance. While previous studies have examined land use changes, community forestry, and conservation awareness around the lake, there is limited research on conflicts over land and resource use rights. This study aims to fill this gap by examining how ILWS management affects local livelihoods and resource access and by proposing solutions to mitigate conflicts while maintaining ecological integrity. ILWS, like many PAs in the global south, is home to human populations that rely on natural resources for their subsistence. The lake's ecological integrity is increasingly threatened by deforestation in the surrounding hills, agricultural runoff, and wetland encroachment. These environmental changes, driven by both population pressures and governance challenges, impact local food

security and biodiversity conservation. At the core of ILWS's management issues is the lack of a well-defined zoning and land-use system. When the PA was established in 1985, there was no clear allocation of land-use rights to local communities beyond limited grazing permissions. As a result, more than 280 villages remained within the PA boundaries. In 2013, portions of the sanctuary were degazetted to accommodate agricultural expansion. Despite these adjustments, the sanctuary still lacks a clear zoning framework that delineates permitted and restricted activities. The conservation objectives often contradict local livelihood interests, creating tensions over land access, firewood and bamboo collection, shifting cultivation, overfishing, and migratory bird hunting. This study seeks to answer these following questions: what are the primary conflicts between state authorities and local communities in the implementation of the PA in the Inlay Lake area?, how do these conflicts influence local perceptions of conservation?, how does the Nature and Wildlife Conservation Division (Forest Department) regulate land and resource use in ILWS?, how do its policies affect the Intha residing in and around the lake?, and what management interventions can be proposed to mitigate conflicts and enhance local participation in PA governance?

Literature Review

As numerous research findings worldwide indicate that engaging local communities in the management of protected areas not only enhances effectiveness compared to exclusive management approaches but also mitigates any negative impacts on these communities, a few studies have emerged in Myanmar investigating the relationships between protected areas and communities, aiming to reduce conservation conflicts and enhance effective management of protected areas through local participation. Soe et al., (2016) conducted a study focusing on the relationship between the local communities of Hponkanrazi Wildlife Sanctuary in Northern Myanmar, particularly the Rawang and Lisu ethnic communities, and the management staff of the sanctuary. The study analyzed these relationships using common governance principles such as accountability, equity and fairness, transparency, inclusiveness, and effectiveness. Specifically, for the equity and fairness, it assessed the allocation of land and resource use rights, as well as the equitable distribution of economic benefits derived from the PA. Similarly, Aung (2019) investigated the relationship between the management of Natmataung National Park, a protected area in North-Western Myanmar, and indigenous Chin ethnic community living in and around the national park by employing the social-ecological coevolution model based on the three main thematic areas: local land tenure

system, livelihood dependence on forest resources, and traditional ecological knowledge (TEK) of local people.

In Myanmar, research on the impacts of protected areas has been limited. Notably, no study has yet been conducted relating to the impacts of protected areas on the land and resource use rights of Intha and other ethnic communities living in and around the Inlay Lake area and the issue of protected area authorities' management of land and resource use. In addition, while there are studies about the nexus between biodiversity conservation, human rights, and various industries like oil and gas, mining, and tourism (Johnson, 2018), existing literature on the intersection of protected areas and human rights in Myanmar appears limited. Previous social studies on protected areas have predominantly focused on aspects such as community perceptions of protected areas, and forest resources dependency (Aung et al., 2015; Htay et al., 2022; Thazin & Eivin, 2020; Theint Htun et al., 2023). Therefore, this study aims to address this gap by specifically examining the intersection between protected areas and human rights with a focus on land and resource use rights of Indigenous people in Inlay Lake. By focusing on this unique context, the study endeavors to shed light on the complexities and implications of human rights within the framework of protected area management in Myanmar.

One of the significant issues worldwide in protected area management is community land rights mainly because of large areas of spatial overlap between lands traditionally owned or used by indigenous peoples and high-biodiversity areas (Sillitoe, 2015; Sze et al. 2022; Viedo & Maffi, 2000). Protected areas inherently impose limitations on rights to land, territories, and resources, as well as cultural practices and livelihood resources available to local communities due to the restriction associated with the governance of each specific area. The costs that protected areas impose upon local communities can include displacement from their land and resources, changes in traditional land tenure, denied or restricted access to resources, loss of employment, crop damage and livestock predation (Lauren et al., 2008). This can affect their traditional livelihoods and resource use practices.

An increasing body of international legal frameworks calls for specific measures to safeguard the rights of Indigenous Peoples, particularly emphasizing their right to Free, Prior, and Informed Consent (FPIC) regarding decisions relating to land and natural resource access. The article 8 of United Nations Declaration on the Rights of Indigenous Peoples adopted by the UN General Assembly in 2007 recognizes the right of indigenous peoples to their lands,

territories, and resources, which they have traditionally owned, occupied, or otherwise used or acquired. The article 10 emphasizes the right of indigenous peoples to free, prior, and informed consent before any relocation occurs and the article 30 emphasizes their right to determine and develop priorities and strategies for the development or use of their lands or territories and to obtain their free and informed consent prior to the approval of any project affecting their lands and other resources (United Nations, 2007). Indigenous people in Myanmar including Intha in Inlay are often economically and socially disadvantaged, closely tied to their land, and have different cultures from the majority Myanmar group (Michalon, 2015), and are at risk of human rights violation (MCRB, 2016). Since indigenous people living in important natural areas have acquired traditional knowledge and practices that have helped sustain the environment and its resources for a long time, the success of conservation largely depends on engaging these people.

Procedural rights play a crucial role in ensuring their involvement in conservation endeavors (Jendrośka et al., 2017). Environmental activists and scholars focused in particular on the procedural rights of access to environmental information, public participation in decision-making, and access to justice and remedies in the event of environmental harm (He Miao, 2016). In protected areas, the right to information includes the duties of the government to disseminate information such as draft and final PA system plans, proposals to declare an area as protected, draft and final management plans as well as monitoring, evaluation, and financial reports with and without request. The right to participation in decision-making can be allowed by providing written comments or participating in meetings and expressing opinions in these contexts. In relation to PAs, crucial decisions involve defining the geographical boundaries of a PA, determining the responsible management authorities, developing management plans, and strategies for PA systems or Marine Protected Areas (MPAs) network, and refining draft environmental and social impact assessments for proposed activities within the PA. The right to remedy in the context of PA is to seek remedy for environmentally harmful activities carried out within the PA as well as to prevent such activities (Jendrośka et al., 2017).

A wide range of indigenous and community land rights have emerged as a result of historical processes of protected area establishment along with legal and policy reforms globally. For example, in the Amazon, alliances between Indigenous peoples and conservation initiatives demonstrate that formalizing communal land rights and leveraging traditional knowledge enhances resource management and biodiversity protection (Schwartzman & Zimmerman,

2005). According to the Rights and Resources Initiative's (RRI) tenure typology, there is a wide range of relationships with community land rights and protected areas: government-administered lands (exclusion protected areas, state-protected areas with some co-management and/or sanctional use), lands designated for use by Indigenous Peoples and local communities (protected areas designated for community management or co-management, areas designated for sustainable use outside protected areas), Indigenous and community-owned lands (Co-managed protected areas on community-owned land, community-owned and managed protected areas) (Springer & Almeida, 2015).

Under these relationships, indigenous people and communities have different levels of rights regarding the land and resources. Based on the literature from political economy and the typology proposed by Ostrom and Schlager (1992), these rights of communities fall into five types of property rights: access rights, withdrawal rights, management rights, exclusion rights, and alienation rights. Access rights are the most basic property rights that an individual may hold. It determines who may enter a defined area and who is eligible to exploit a specific resource. Withdrawal rights are the rights to appropriation of goods or resources from a natural or man-made resource system. Collectively, access and withdrawal rights are called use rights. Management rights are the rights to regulate resource withdrawal, to transform the resource by making improvements, and to influence the evolution of the institutional framework. Exclusion rights are the rights to restrict access rights, which is having the authority to exclude others from entering a specific space or exploiting resources (Schlager & Ostrom, 1992).

Property Rights Theory provides a critical lens for analyzing how the establishment of protected areas impacts land and resource use rights of local communities. This theory examines who has the right to enter a resource area (access rights), who can extract or use resources (e.g., timber, fish) (withdrawal rights), who has decision-making authority regarding resource use and management (management rights), who can exclude others from accessing or using resources (exclusion rights) and, who can transfer or sell resource rights to others (alienation rights). Protected areas often restructure these rights, particularly by imposing formalized conservation rules over customary systems. This causes restrictions on access and withdrawal rights, limiting the ability of communities to fish, hunt, or cultivate lands, thereby undermining their livelihoods. Ambiguities or inequities in property rights can lead to conflicts, resistance, and a loss of community trust in conservation efforts.

Using the property rights framework, we examined how property rights are arranged and how local livelihoods are influenced in our case study. Additionally, the conceptual framework incorporates the conflict component, focusing on how conflicts arise from governance arrangements regarding land and resource use in ILWS. Furthermore, the framework integrates two elements of procedural rights theory, the right to information and the right to participation, evaluating whether local communities have these rights. The study thus explores the property rights arrangement, the management of Inlay Lake Wildlife Sanctuary, the emergence of conflicts, and the procedural rights available to communities.

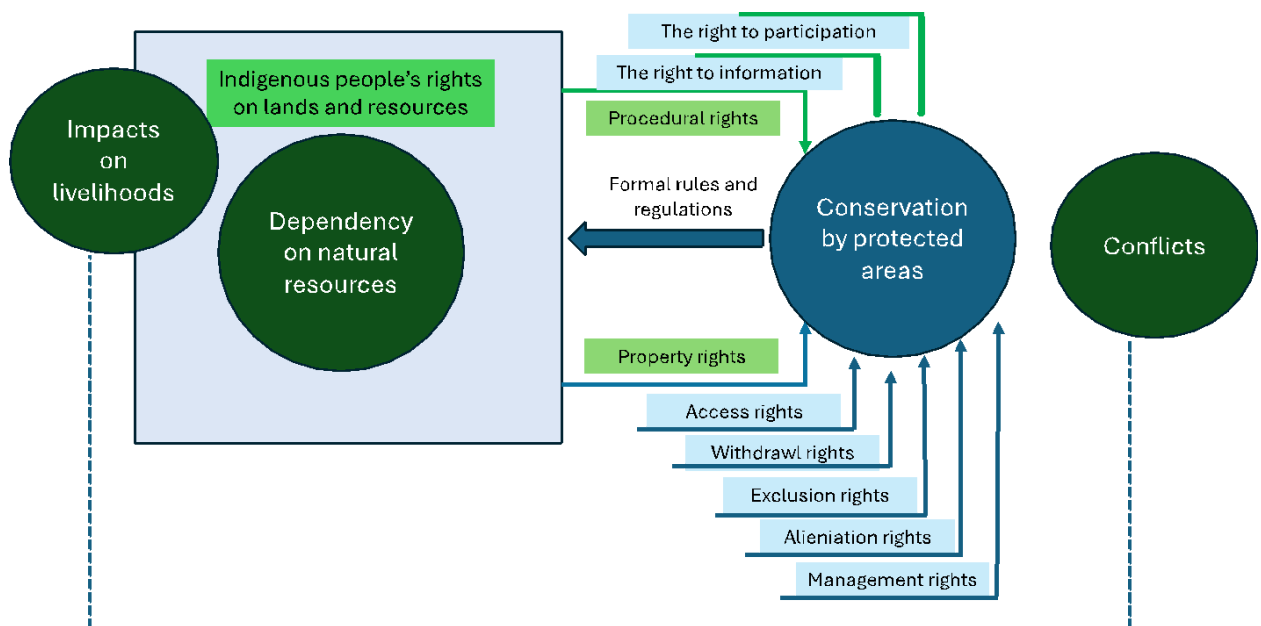


Figure 1. The conceptual framework for analyzing the impacts of protected areas on land and resource use rights

Methodology

Study Area

Inlay Lake is the country's second-largest freshwater lake in Shan State, eastern Myanmar, spanning across the three townships of Nyaung Shwe, Pinlaung, and Peh Kon. The lake was formed more than 1.5 million years ago (Bertrand & Rangin 2003). This natural lake encompasses an open water area of 62.2 km², and during the dry season, the average water depth is 0.5 meter, with the deepest point being 1.9 meter, but during the rainy season this can increase by 2.9 meter. Out of seven categories of protected areas in Myanmar under the Conservation of Biodiversity and Protected Areas Law (2018) (scientific reserve, national park, marine national park, nature reserve, wildlife sanctuary, geo-features significant area,

community conserved protected area), Inlay Lake is under the protected area category of wildlife sanctuary. Being a biodiversity-rich wetland with distinct biophysical characteristics, it has been designated as a wildlife sanctuary in 1985, by the ASEAN as an ASEAN heritage park in 2003, by UNESCO as a Man and Biosphere Reserve in 2015, as a RAMSAR site in 2018 and as an East Asian Australasian Flyway Network Site in 2020. It is also one of the 21 ecotourism sites in Myanmar. ILWS has been protecting diverse fauna and flora, especially the native aquatic plants, freshwater fishes, and resident and migratory birds. The area of Inlay Lake Wildlife Sanctuary is 13,882.376 acres (approximately 206.06 square miles).

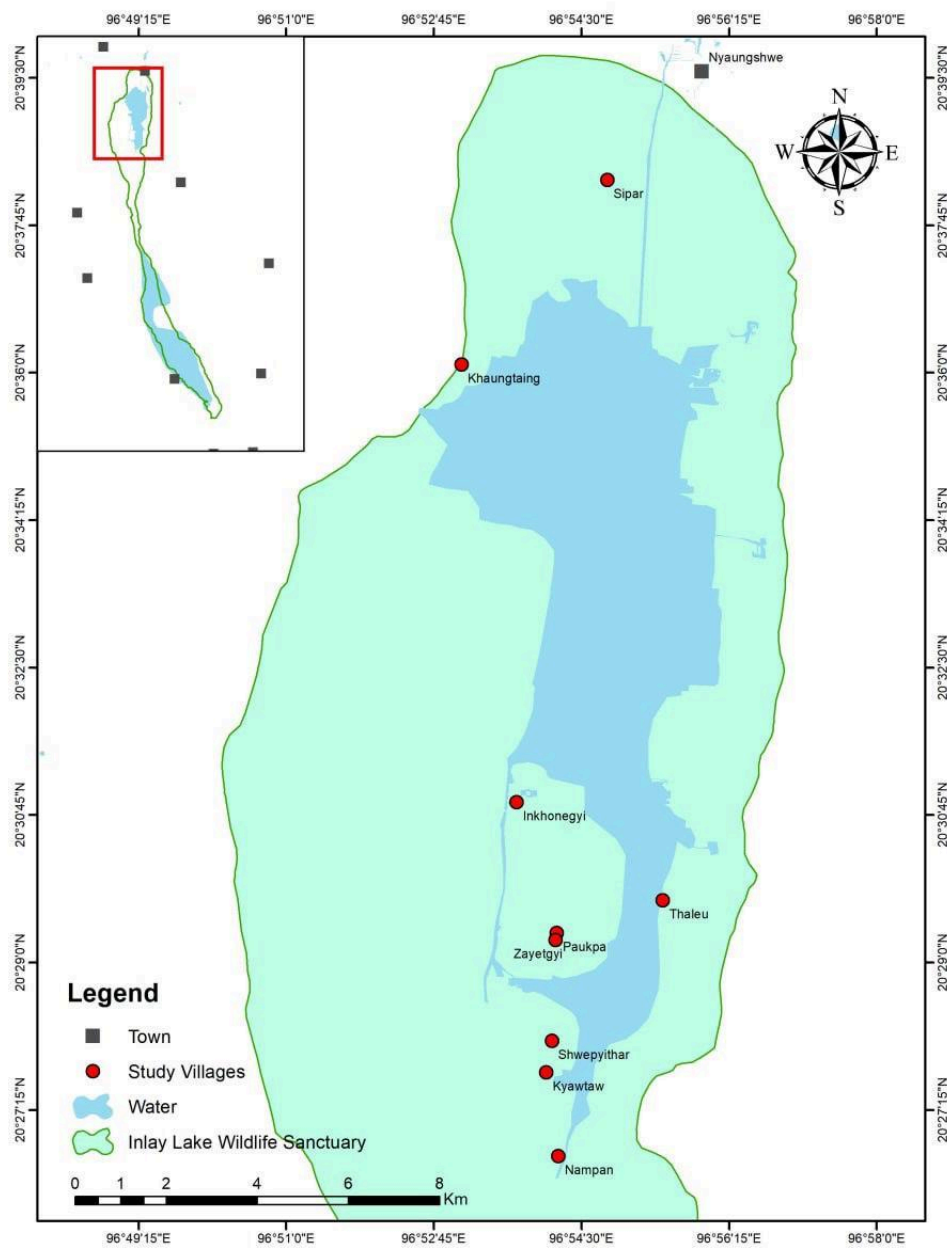


Figure 2. Location map of the study area with surveyed villages

There are 284 villages in the ILWS (265 in Nyaung Shwe, 3 in Pinlaung and 16 in Peh Kon) with a population of over 160,000. The local populations are from different ethnic groups such as Intha, Da Nu, Pa Oh, Kayan and Taungyoe. Livelihood options include farmers, fishers, ecotourism-related business and small-scale craft business specializing in silverware, ironware, woodcrafts and textiles. The majority of the population in the area is Intha. Out of the three townships, we focused exclusively on Nyaung Shwe Township, where the largest portion of the wildlife sanctuary exists, due to unsafe travel conditions in the other two.

Since 2010, the tourism industry and other regional development activities have rapidly expanded, leading to increased human settlements and new land uses. The Nyaung Shwe township's population has grown significantly, from approximately 75,000 inhabitants in 1969 to 189,000 in 2014 (MOIP 2015). These changes have intensified pressure on the lake's conservation efforts. In light of high population pressure, accumulated and intensified livelihood activities in the lake and contradicting conservation interest and local interest, the study investigated issues related to the land and resource use rights of local communities in relation to protected area management, the local people's perceptions of the protected area and the impacts they have experienced from its implementation.

Data Collection

The data were collected using a qualitative approach, to investigate dependency on protected area (PA) for resource use, conflicts with PA management and community livelihood activities, the level of land and resource use rights granted, cost and benefits of PA and their perceptions towards the PA. The data collection methods are direct observations, key informant interviews (KII) and individual household interviews (IHH). The study area involves villages in and around the lake. Having experienced severe flooding damage in the entire study area, each household could not be visited by boat. Thus, interview participants selected by the information given by the key informants were gathered at a point and each participant was separately interviewed in order to avoid replication of the responses.

Key informant interviews (KII) were performed with key actors: village heads, elders and staff of the protected area. A total of 7 KII, were interviewed based on a purposive sampling strategy. Among the key informants, one PA staff member who can overview the protected area management, land and resource use conflicts, and livelihood patterns of local people, was chosen for preliminary observation of the entire research to select the villages depending

on the land and resource use for the livelihoods on PA and those who have experienced conflicts with the Wildlife Sanctuary.

We applied individual household interviews (IHH) to capture detailed information of ethnic lake communities who depend on the resources of PA for their livelihoods and facing conflicts and challenges to their livelihoods related with PA management interventions. Individual households were selected using a random and purposive sampling method. Before interviews were conducted, informal discussion with village heads and stakeholders was carried out to acquire detailed understanding of land and resource use activities of each household. Based on the discussion points and the information obtained from KII, a total of 20 interviewees were selected for individual household interviews (IHH) with a set of semi-structured questionnaires. Moreover, direct observations and interviews were applied to individuals who were extracting resources such as fish and collecting aquatic weeds near protected areas in order to explore experiences who were facing conflicts with PA management authorities. The verbal consent was taken from all the participants before the interview.

Table 1. The study sites in the Inlay Lake

Village Tract	Village	IHH	KII
Kalar	Inkhonegyi	3	-
	Zayetgyi	1	2
Khaung Taing	Khaungtaing	4	-
Nan Pam	Kyartaw	2	1
	Nampan	2	1
	Paukpa	2	-
Nan Thae	Sipar	1	1
Nga Phal Chaung	Shwepyithar	1	-
Tha Lae Oo	Thaleu	4	1

	PAs staff	-	1
Total		20	7

Data Analysis

Semi-structured interviews were analyzed by tabulating responses in a spreadsheet to organize the data. Each participant's answers were recorded under each respective question. The proportion of "Yes" and "No" responses were calculated to get the quantitative view of the data. Open-ended questions and interview answers from KII were analyzed by using the qualitative approach to explore meanings, patterns and themes. The answers were translated into English, the interviewees' answers in English translation were thoroughly read and developed into descriptive codes, which are codes that are derived directly from the participants' statements or are recurring phrases found within the texts being analyzed (Cope 2005). After coding, the codes were categorized into broader categories or themes. Coding was done inductively, allowing themes to emerge naturally from the data. In this way, unexpected relationships or patterns in the data can be discovered, which can result in the most significant findings that are not initially expected at the start of the analysis (Cope 2005).

Findings

Conflicts with Protected Area Management

A significant theme that emerged from the interviews was the frequent conflicts between the local people and PA authorities, particularly concerning the expansion of floating gardens and restrictions on resource use such as aquatic plants and fishes. The interviews also revealed a widespread issue regarding the lack of land use certificates among local communities. In several cases, participants highlighted that they were permitted to use land for agriculture temporarily (e.g., through form-7). Under the 2012 Farmland Law, form-7 grants farmers land use rights, allowing them to possess, cultivate, benefit from, sell, mortgage, lease, or exchange the land, subject to legal procedures. One of the interviewees said, "We have form-7 for agriculture on the land but do not have legal documents for agriculture in the lake." The absence of recognized land titles has significantly undermined the local communities' ability to claim their rights and negotiate for access to resources.

The conflicts also arise from competing land uses and lack of recognition of the land titles of the villagers. The actors involved in the conflict vary from the protected area staff from Forest Department to other government departments such as Irrigation department and Electricity office (EPC), and the private sector the hotel operators. One significant issue is illegal expansion of floating gardens into restricted lake areas demarcated by the Irrigation Department with the notification sign boards. Electric fishing is strictly prohibited and those who engage in it are arrested by the PA staff. The fishing equipment and boats are seized by the staff and the villagers have to give the written commitment for not engaging in such activities in the future. In serious cases, villagers from Kyar-taw village were detained for fishing with prohibited nets by the fishery department and using electric fishing methods. The fishery department sued them according to the fishery law. Staff from the protected areas served as witnesses when prosecuting them. Other land use issues include appropriation of old floating gardens that were left uncultivated for a long time, under the protected area boundary, extension of hotel and EPC offices into the village lands even though the villagers have some proof that they own the land, e.g, certificate for cultivation. These situations illustrate conflicts resulting from unclear land rights, where the villagers' rights are often overlooked without proper consultation of the grassroot level people. Additionally, ambiguities of the legal frameworks governing land ownership and use worsen conflicts over land and resource access.

Attempts to resolve these conflicts include interactions between actors such as village heads, Land administration department, Irrigation department, protected area staff from Forest Department, and EPC officers. The resolutions conducted include excluding the conflicted village area from the protected areas, enforcement by confiscation, negotiation by the village heads with the authority concerned, soft enforcement such as taking written consent for not repeating the activities and punishment in the form of cleaning the protected area compound. The villagers usually resume the illegal floating agriculture activities when left unchecked as the wildlife sanctuary staff cannot monitor the lake area all the time.

Poor communication between PA authorities and local communities was identified as a key barrier to resolving conflicts and promoting effective management. Interview participants noted that clear communication channels, particularly regarding boundaries and resource access, were often lacking. This led to confusion about land use regulations, making it more difficult to address concerns raised by the villagers. Some participants reported that while village heads could engage with PA authorities, the wider community was excluded from

meaningful conversations and decisions, reducing local trust and involvement in PA management.

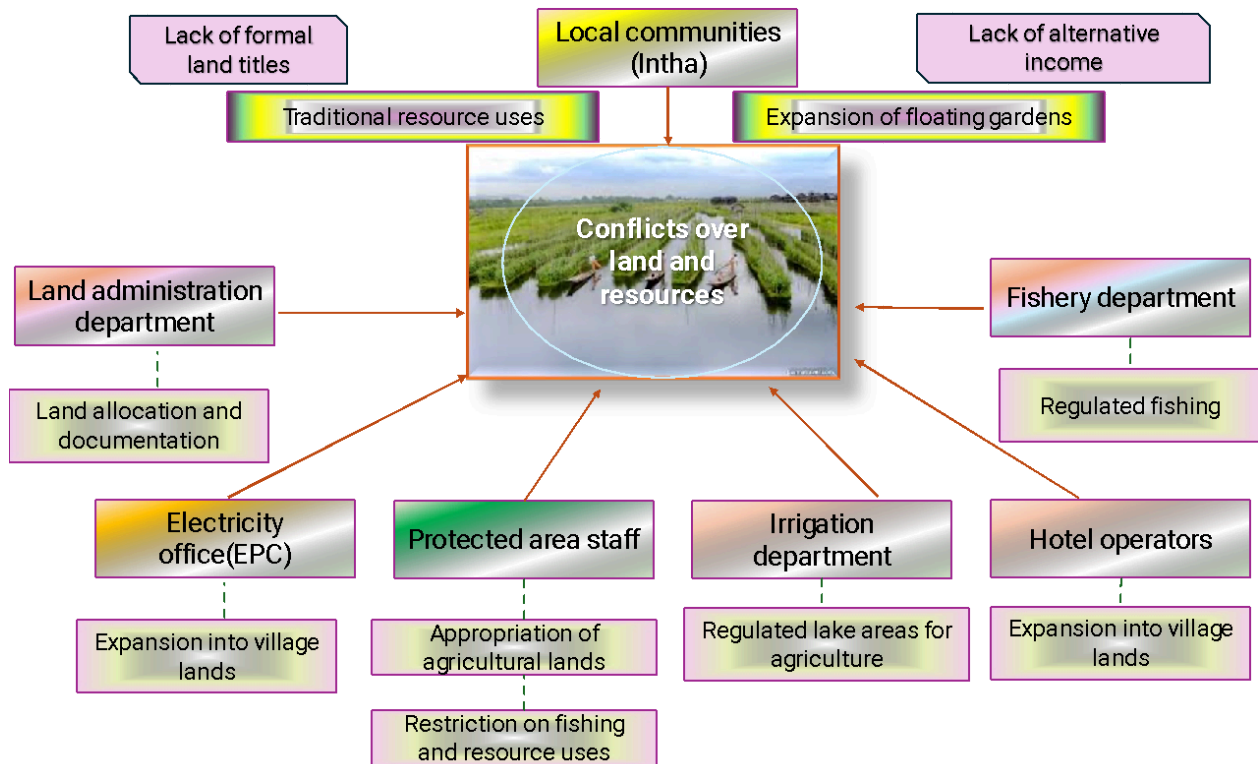


Figure 3. The emergence of conflicts from the actions of various stakeholders in Inlay Lake Wildlife Sanctuary

Land Ownership

Ninety percent of the respondents own the land, in most cases, through inheritance. Only a few (25%) own the land by purchasing. Forty five percent own less than 1 acre, another 45 percent own between 1 acre and 3 acres, while only 10 percent own above five acres. Seventy-five percent do not have formal land title or other documents for their land ownership. Most of them have possessed the land above 10 years. Sixty-five percent of the respondents' land do not fall under the protected area while the rest falls under it. All the respondents except one think they have the right to transfer their land to other people within the family, within the community, and outside the community. Seventy-five percent think that they have the right to sell their land and 25% think that they do not have the right to sell their land. Seventy percent of the respondents think that they have the right to exclude others from their land. However, transferring the land, selling the land and exclusion of others largely depend on the village heads' approval. Seventy percent of the respondents think that they

have very secure land tenure, and another 30% think they have insecure land tenure because they do not have a proof of land title to do floating gardens, and they cannot get the land titles in the lake. However, they think it is still possible to apply for land tenure at the Land administration department, but nobody is willing to get involved in the complicated lengthy government process (Huard et al., 2017). Nobody except one had experienced land or any property loss to the wildlife sanctuary. Ten percent of the respondents feel that they have very insecure tenure, 10% think that they have insecure tenure, another 10% think that they have somehow secure tenure and 70% think that they have very secure tenure (Table 2).

Table 2. Summary of the land ownership and tenure perceptions of the respondents

Category	Description	Number of respondents (%) (n=20)
Land ownership	Own the land	90
	-Through inheritance	65
	-Through purchase	25
	Have no formal land title	75
	Possessed land for over 10 years	70
Land size	- < 1 acre	45
	-Between 1 acre and 3 acres	45
	-Above 5 acres	10
Location relative to wildlife sanctuary	Outside wildlife sanctuary	65
	Inside wildlife sanctuary	35
Land rights perception	Right to transfer land	95

	Right to sell land	75
	No right to sell land	25
	Right to exclude others	70
	(Transfer, sale, and exclusion depending on village heads' approval)	
Land tenure security	Very secure land tenure	70
	Insecure land tenure	30 (very insecure 10, insecure 10, somehow secure 10)

Protected Area Management and Community Perception

When respondents were asked about how the management of wildlife sanctuaries affect their livelihoods, the responses include both positive and negative impacts. One positive response was increasing the fish population due to conservation. Forty percent of the respondents answered that ILWS affects their livelihoods by limiting fishing zones, prohibiting the extension of floating gardens, village areas and building houses. These restrictions are imposed by the protected area staff by installing signboards and boundary piles.

Some people do not know where exactly the sanctuary exists, they only heard about it. Fifty-five percent of the respondents think that rules and regulations of the WS are easy to follow, and 45% think that they are not easy to follow. Most of the people do not know about the rules and regulations of the WS. In terms of benefits, 60% answered that the ILWS do not have any benefits on the local livelihoods, while 35% thinks that the WS benefits the local livelihoods based on the fact that there are plenty of fish, plenty of birds which eat snails, which is beneficial to agriculture, fire protection near the forests and income generation from tourism. However, they reported that the sanctuary does not help keep good water quality. Regarding the local peoples' willingness to support the conservation, 70% responded that they do not want to support the conservation by the wildlife sanctuary.

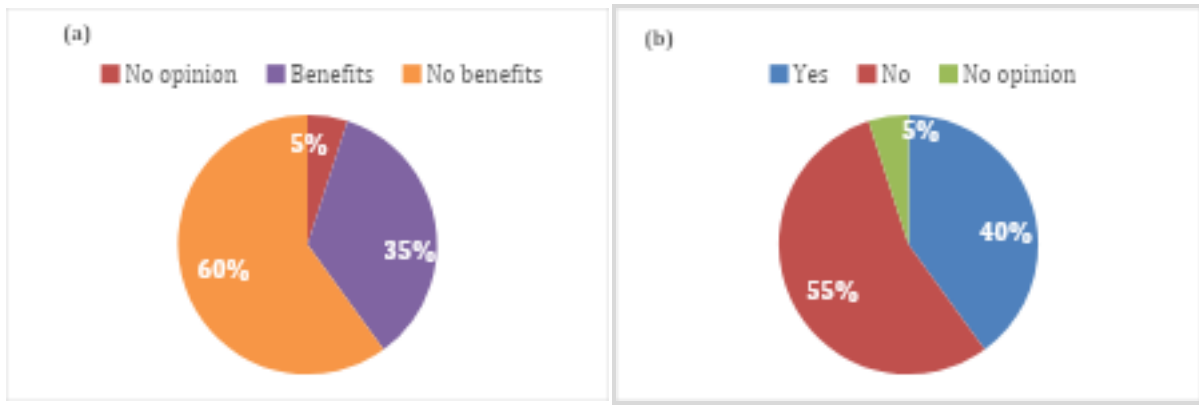


Figure 4. Local people's opinion on (a) benefits of ILWS on their livelihoods (b) impacts of ILWS on their livelihoods

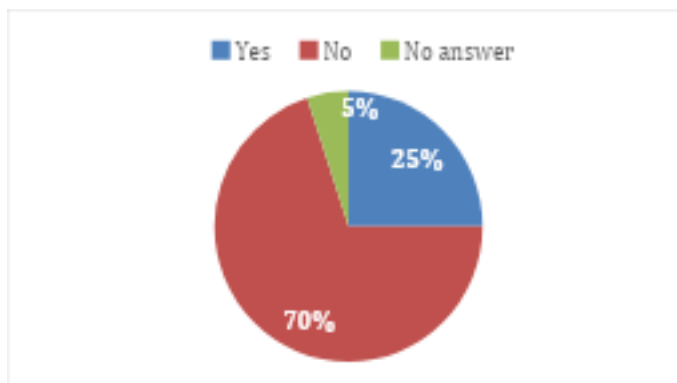


Figure 5. Local People's willingness to support the conservation of the lake by the wildlife sanctuary

Expected Type of Management for a Better Relationship with the Community and Sustainable Conservation of the Lake

Respondents' answers for effective management for fostering better relationships with communities and promoting sustainable conservation of the ILWS focus on the combination of regulation, collaboration, and responsiveness to the local peoples' livelihood problems. They suggest that authorities should regulate resource use, such as controlling floating garden collection and managing shifting cultivation by Pao ethnic groups in upland areas, while strictly enforcing rules and guidelines. Raising community awareness, particularly among the youth, about sustainable practices and encouraging cooperation in addressing harmful activities like electric fishing are critical. Collaborative approaches, such as involving local leaders and departments to address challenges like sediment removal through adequate resources, and resolving smaller issues locally, are also essential. Additionally, staff should

promptly address community difficulties and escalate complex cases to higher authorities when necessary. Finally, management must adapt to external challenges, as seen during the COVID-19 pandemic and political disruptions, which shifted community livelihoods from tourism business toward traditional ways of livelihoods_floating gardens.

From the community's perspectives, to address and resolve conflicts between customary rights and conservation perspectives effectively, regulation and community needs should come into balance. The respondents recommended implementing projects, which provides financial assistance for community livelihoods, providing an example of previous projects, addressing communication gaps in installing signboards for restricted access, fulfilling local needs by widening road areas, controlling the expansion of floating gardens near roads, and conducting regular patrolling. Additionally, some respondents suggest considering the local livelihoods in defining no-fishing season, to align conservation rules with local livelihoods. Aligning conservation priorities with practical solutions for community livelihood challenges is key to minimizing conflicts and fostering cooperation.

The Right to Information

It was found that there is very little information flow from wildlife sanctuary management to the local communities. Seventy five percent of the respondents answered that they have not received any information regarding the planned management activities of the wildlife sanctuary. Ninety percent of the respondents answered that they have not received any information or prior consultation about the zoning, and Dos and Don'ts in the sanctuary area. The main channels they received information about the sanctuary are through media, local meetings and protected area staff. Seventy percent of the respondents think that it is not easy for them to get information regarding conservation activities. Twenty-five percent and five percent think that it is slightly easy and moderately easy to get the information, respectively. All the respondents do not know the main governing law and policies for ILWS management, and respective land and resource use rights for local communities and indigenous people mentioned in these documents. Forty percent of the respondents think that it is extremely crucial to inform local communities about the conservation and management activities of the wildlife sanctuary. Twenty percent, 10 percent, and 15 percent think that it is very crucial, moderately crucial and slightly crucial to share the information, respectively. The rest think that it is not crucial. Seventy five percent of the respondents answered that they do not receive any information regarding the business activities allowance or restrictions in the Inlay

Lake, and 70 percent reported they do not get informed about any business activities or development project in and around the lake. Seventy-five percent do not know about the Inlay Lake being designated as a Man and Biosphere Reserve, which allows for living harmony with conservation and livelihoods. Cases of confiscation also reflects insufficient awareness-raising efforts by various staff regarding the boundaries of protected areas, and which government department is responsible for managing them. Additionally, from another perspective, the issue may be due to a lack of accessible information about where fishing is allowed or prohibited.

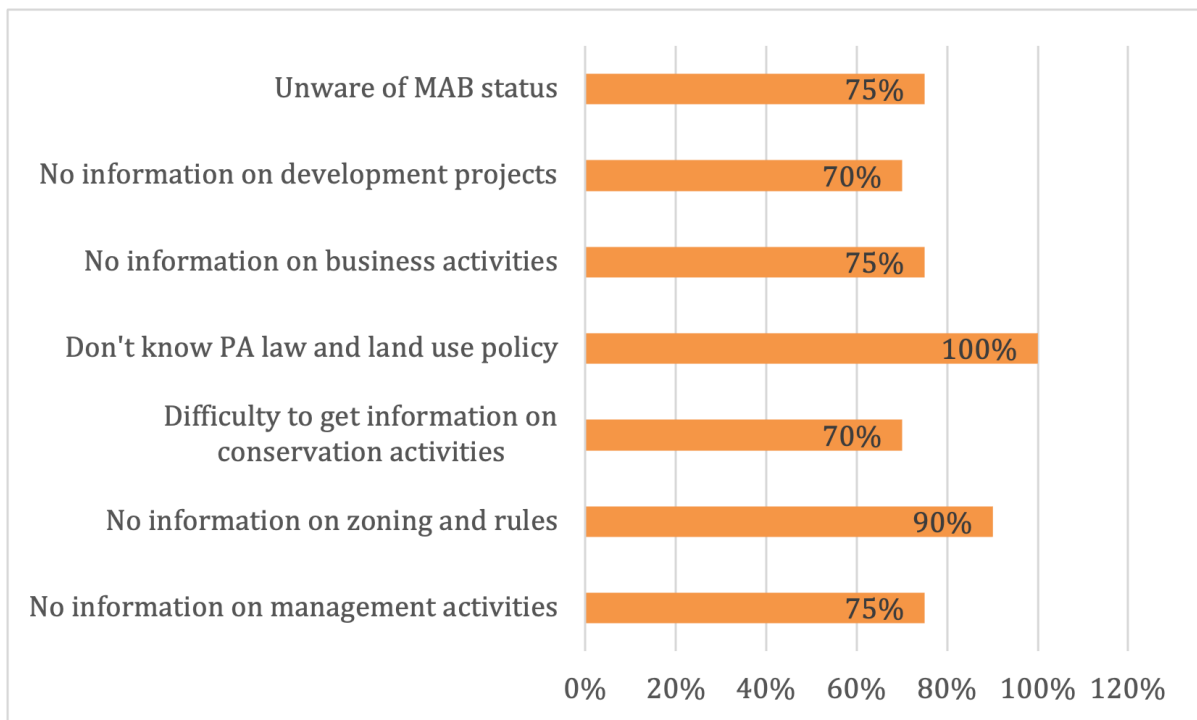


Figure 6. Information gap among local communities regarding the ILWS management

The Right to Participation

Ninety percent of the respondents mentioned that they have never got consulted or attended a consultation workshop regarding the management plan development of the WS. Eighty-five percent said that they have not been involved in any discussions or decision-making processes with the wildlife sanctuary management, resource use and conservation. Fifteen percent have participated in activities such as biodiversity conservation, reporting illegal activities including electric fishing, fire protection, awareness raising activities, weeding, sedimentation control, bird conservation and planting.

Local communities in the study areas were not involved in the actual management of the PA. Interviews highlighted that while some villagers participated in awareness-raising activities, they had no influence on decision-making processes regarding PA regulations. The absence of local participation in PA governance resulted in policies and restrictions being imposed on the community without considering their cultural practices or livelihood needs. Greater inclusion of local communities in PA decision-making is vital to ensure that conservation efforts align with local needs and to build trust.

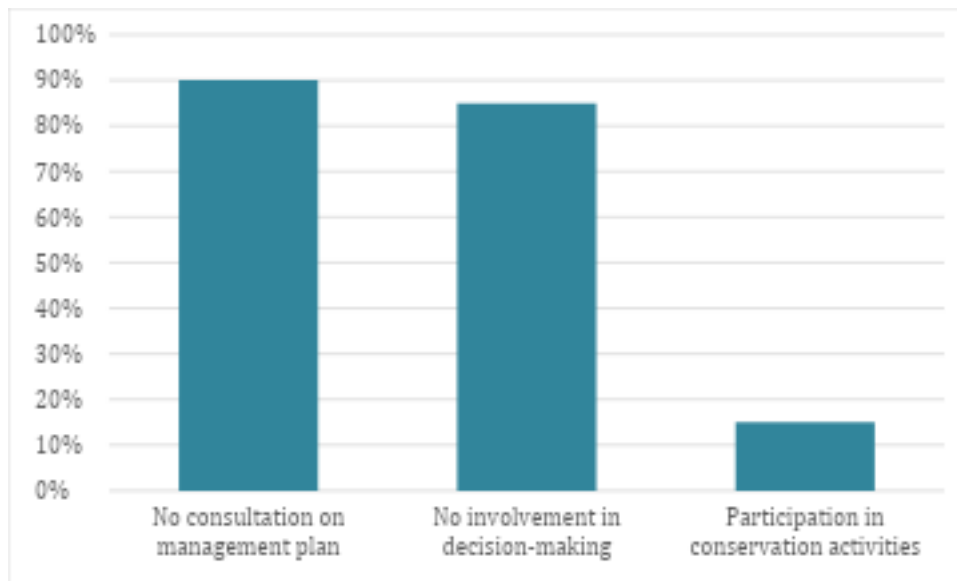


Figure 7. Number of respondents on community participation and consultation in ILWS management

This issue of limited participation is further complicated by the legal framework governing land tenure. According to RRI’s tenure typology, ILWS is government-administered land under statutory law, which does not formally recognize the customary tenure regimes (Springer & Almeida, 2015). In this type of land, the community's rights of access and use is allowed to some degree by defining the buffer zone. This was clearly seen in the Inlay case where Intha cannot practice the floating agriculture in areas where they do not hold form-7 even though they claim that they own the lake and resources traditionally. Form-7 is a permit letter for doing agriculture (Huard et al., 2017), which does not provide a full tenure security as reported by some respondents that their lands under form-7 have been under the protected area boundary. One respondent said, “we do floating gardens for six months and fishing for six months”, now their tradition has been restricted by the protected area management.

Out of key elements of the property rights, Intha community has access rights, withdrawal rights with some limitations, exclusion rights and alienation rights, but lacks management rights. However, much of the right is only partial based on the fact that they can officially make the decision about the land depending on the village head's approval. Also in other studies in Myanmar, the head of villages play a crucial role in decisions about the land ownership, and conflict about the land use (Huard et al. 2017). They are also key facilitators between the villagers and government authorities in land registration processes (Huard et al. 2017). The major conflicts between state authorities and local communities regarding the implementation of protected areas (PAs) in the Inlay Lake area primarily stem from zoning restrictions on land and resource use, lack of formal land ownership and clear legal recognition of customary rights, the prohibition of fishing with prohibited mesh size, and electric fishing, and subsequent enforcement actions like arrests, equipment confiscation and displaying the photo record of confiscated people. These issues are caused by poor communication from PA authorities, as local villagers frequently report being uninformed about zoning laws, resource regulations, or conservation rules and regulations of ILWS. This lack of participatory governance and limited procedural rights, fosters distrust and reduces local support for the conservation agenda. Some respondents do not know exactly what and where ILWS is.

With regard to degradation of the Inlay Lake ecosystem, the Nature and Wildlife Conservation Division, under the Forest Department, manages land and resource use in the Inlay Lake area by enforcing conservation laws, and regulating activities like fishing, extension of agriculture and hunting for birds. However, this approach tends to focus on top-down enforcement rather than collaboration or co-management with local communities, which is common in protected area governance where the local community's participation in management is deficient, lacking the decision power and a voice to influence the rules imposed on them (Pelletier et al., 2019). The Intha and other ethnic groups in the area are significantly affected by these policies, as restrictions on floating gardens, fishing activities, and land use directly challenge their traditional livelihoods. Moreover, the failure to consider alternative livelihood support or funding for sustainable agriculture and lack of economic benefits sharing from protected area worsened the livelihood difficulties when the tourism sector disrupted after Covid-19 pandemic. In fishing villages, fishing nets allowed by the fishery department were provided to the fishers. As villagers like fuel-efficient A1 stoves, allocated A1 stoves by the government are distributed to the villages before but these

supports are not sustainable and did not last long. Being a Man and Biosphere (MAB) reserve, the ILWS has the potential for human presence and sustainable use through core areas, buffer zones and transition areas. However, most of the respondents do not know that Inlay Lake is a MAB. Additionally, zoning implementation in many MAB cases, has been problematic due to the community's criticism of the lack of genuine participation, enforcement not aligning with detailed zoning plans, ambiguity around resource-use rules and zoning locations, and ineffective zoning plans which remains on the paper in the office's cupboard (Naughton-Treves et al., 2006). Therefore, zoning in the MAB needs participatory and adaptive management in response to community needs (Naughton-Treves et al., 2006). Sustainable livelihoods support and community engagement through inclusive and adaptive management strategies are essential for effective and equitable conservation.

To reduce conflicts and enhance participation, management interventions need to set a balance between conservation priorities and the livelihood needs of local communities. Formalizing land tenure could help reduce tensions by providing greater security for traditional practices like floating gardens. Recognition of traditional rights can take different forms such as legal frameworks, co-management arrangements, or systems rooted in customary governance (Tran et al. 2019). Livelihood support programs, including financial assistance, capacity-building initiatives, and alternative income opportunities, would alleviate economic pressures while fostering positive conservation attitudes. Sze et al., (2022) recommended conservation basic income, mitigating Economic Impacts of Industrial Resource Extraction and co-developing conservation plans with local communities. Enhancing communication between authorities and communities is critical; this can include clear dissemination of rules through community meetings, sign boards for WS boundary and different zones, and participatory planning sessions. By prioritizing inclusivity and responsiveness in conservation management, conflicts could be mitigated while promoting sustainable coexistence in the region. Ensuring land tenure security, fair access to resources, and equitable distribution of benefits is crucial for achieving conservation goals while supporting community welfare.

The perception of a protected area (PA) and its conservation outcomes can vary depending on the fairness of its management and the rights granted to local communities. When communities are given more equitable rights and a say in management, they are more likely to support the PA, leading to better conservation outcomes. Most of the respondents have a positive view on conservation outcomes of the ILWS, such as abundance of fish and birds.

Residents of protected areas usually share a positive view of enjoying ecosystem goods and services available due to conservation by protected areas and recognize the benefits as a result of conservation (Pelletier et al., 2019; Amin & Kone, 2015). Therefore, supporting the livelihoods and reconciling the needs and claims of local communities with conservation goals is the potential solution. Additionally, experts on protected areas do not recommend the extreme measures such as large-scale evictions to force people out of PAs, land-purchase programs to remove local people from PAs, degazettement and excisement, cutting out parts of PAs that are currently occupied (Naughton-Treves et al., 2006). Engaging local communities at all levels in the management activities of the wildlife sanctuary, including the sharing of information is essential for achieving equitable management and successful conservation outcomes.

To improve the effective coordination among stakeholders and reduce conflicts, it is recommended to establish a multi-stakeholder lake management authority or reviving the existing committees that includes representatives from local communities and government departments. To ensure grassroots level participation, this committee should be supported by village-level user groups. Regular functioning of these groups through formal or informal meetings, joint resource monitoring and transparent information-sharing regarding the important decisions about the lake resources can help negotiate disputes and foster trust among stakeholders. They can be facilitated by external actors such as civil society or academic institutions as needed for strengthening capacity and help to scientifically assess conditions of the lake resources.

Conclusion

Globally, protected area management often faces a range of issues, including conflicts between local communities and authorities, unclear land tenure rights, and exclusionary conservation practices. These challenges are also evident in the case of ILWS. The findings highlight the significant challenges faced by local people, including land tenure insecurity, exclusion from decision-making processes, and poor communication from PA authorities. These factors contribute to widespread conflicts regarding resource use, particularly related to floating gardens and fishing practices.

Despite some positive conservation outcomes, such as increased fish populations, the lack of clear legal recognition of customary rights and the limited involvement of local

communities in PA governance led to clashes with conservation initiatives and livelihood needs. The study shows that addressing issues of land tenure, providing financial and livelihood support, and improving communication and participatory governance are crucial for fostering better relationships between authorities and local communities. Additionally, aligning conservation objectives with community needs and adapting the management to it to improve responsiveness to the current social and political changes is vital for sustainable management of protected areas.

To enhance the effectiveness of PA management, future efforts must prioritize inclusivity, transparency, and responsiveness. This will not only mitigate conflicts but also promote long-term coexistence between conservation goals and local livelihoods, ensuring that both environmental protection and community welfare are achieved. Through these integrated approaches, it is possible to create more equitable and sustainable solutions that respect the rights and needs of local people while advancing conservation objectives.

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Please cite this working paper as:

M. Mon. & M. Phoo. (2025). *The Implication of Protected Areas on Land Resource Use Rights: A Case Study in Inlay Lake Wildlife Sanctuary, Myanmar* (Working Paper Series - 2025/08). YCU-RI.
