

**Bridging Procedural Gaps in Environmental
Governance: Community Perceptions from
Indawgyi Lake, Myanmar**

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Abstract

This study investigates how rural communities in Myanmar perceive and engage with procedural environmental rights—specifically, the rights to access information and participate in environmental decision-making. Focusing on villages around Indawgyi Lake, an ecologically significant area in Kachin State, the study draws on household surveys (n=58) and key informant interviews (n=27) to assess environmental awareness, information access, and participation levels. Findings reveal high concern for environmental degradation, including climate impacts, mining pollution, and biodiversity loss, but limited understanding of environmental rights and formal regulations. While most respondents accessed information through digital media or civil society organizations, barriers such as language, weak infrastructure, and limited outreach persist. Participation in decision-making processes was minimal, despite strong willingness among community members. The study highlights the need for inclusive environmental governance models that combine legal provisions with institutional accountability, localized communication strategies, and support for community-based organizations. Policy recommendations include strengthening environmental education, expanding access to information, institutionalizing participatory frameworks, and harmonizing legal mandates. These findings contribute to regional and global discussions on environmental rights in politically and institutionally fragile contexts.

KEYWORDS: *Procedural environmental rights; public participation; access to information; environmental governance; Indawgyi Lake; Myanmar*

Introduction

Environmental issues, such as climate change, pollution, and biodiversity loss, (Warner et al. 2010; UNEP 2021a) has impelled global recognition of environmental rights as a bedrock of sustainable development (Mensah 2019; Greene 2020; (UN Special Rapporteur on the human rights and the environment 2018; UNEP 2021a; New Mandala 2023). Over the past five decades, international legal instruments—including the Stockholm Declaration (1972), Rio Declaration (1992), Aarhus Convention (1998), and Paris Agreement (2015)—have emphasized the critical importance of public access to environmental information, participation in decision-making, and access to justice (United Nations 1972; Ituarte-Lima et al. 2020; UNEP 2021b). These procedural environmental rights are increasingly seen as essential tools for promoting transparency, accountability, and inclusive environmental governance.

Globally, more than 150 UN member states recognize environmental rights to varying degrees within their constitutions (Ituarte-Lima et al. 2020). In Southeast Asia, countries such as Thailand and the Philippines have made notable progress in implementing these rights, particularly through public interest litigation and environmental education (Ituarte-Lima et al. 2020; Sandhu 2021). However, according to the recent report by UNEP (2019) (UNEP 2019a), the practical realization of these rights remains uneven, especially in politically fragile or rural contexts where awareness is low and institutional support is weak (Newig and Fritsch 2009; Newig et al. 2018; Hickey and Maria-Sube 2022).

Myanmar has adopted several environmental policies and laws (The Republic of the Union of Myanmar 2019; The Pyidaungsu Hluttaw 2012; The Pyihtaungsu Hluttaw 2018), including the Environmental Conservation Law (2012), Forest Law (2018), and National Environmental Policy (2019), which underscore public participation and sustainable resource use. Nevertheless, the country lacks an explicit constitutional guarantee of environmental rights (Frontier Myanmar 2020; Mongabay 2021; Amnesty International 2017; Business and Human Rights Resource Center 2024; Roberts and Mai 2021). Implementation gaps, weak law enforcement, and limited public awareness, particularly in rural areas, hinder the realization of procedural environmental rights in practice (DW 2015; Crane 2016; Mongabay 2016; Hickey and Maria-Sube 2022; Htay et al. 2022; Khaing and Hawng 2021; EJAtlas 2023; Hildén et al. 2016). In areas like Indawgyi Lake—a UNESCO Biosphere Reserve facing mounting environmental pressures from mining, deforestation, and ecotourism—the local

population is directly dependent on natural resources but often excluded from decision-making processes.

Despite the growing relevance of environmental rights in international discourse, there is a significant research gap in Myanmar concerning how local communities perceive and exercise these rights. Existing studies tend to focus on institutional reforms or ecological outcomes, with limited attention paid to grassroots perspectives on procedural rights.

Against this background, this study investigates the procedural dimensions of environmental rights—namely access to environmental information and the right to participate in decision-making—in the context of rural communities around Indawgyi Lake in Kachin State, Myanmar. It aims to assess the level of environmental awareness among local people, examine how they access environmental information, and evaluate their participation in environmental decision-making. The study is guided by the following questions: (1) What is the level of awareness regarding environmental issues, regulations, and rights among local communities? (2) How do people access environmental information, and what barriers do they face? (3) To what extent are local communities involved in decision-making processes related to environmental governance? These questions seek to uncover the on-the-ground realities of environmental governance in Myanmar and identify structural constraints to the realization of procedural rights in resource-dependent, rural settings.

Literature Review

Environmental rights have emerged as a central component of international environmental law and governance. Following the 1972 United Nations Conference on the Human Environment, global legal frameworks such as the Stockholm Declaration, Rio Declaration, and the Aarhus Convention (1998) have promoted procedural rights—namely access to information, public participation in decision-making, and access to justice—as key mechanisms for achieving environmental sustainability. These frameworks are reinforced by agreements such as the Paris Agreement and the Convention on Biological Diversity, which underscore the need for inclusive and participatory governance mechanisms (UNEP 2019a).

Globally, 156 out of 193 UN Member States formally recognize environmental rights in their constitutions (Ituarte-Lima et al. 2020). For instance, judicial systems in Thailand and the Philippines have upheld environmental rights through court rulings that affirm constitutional protections (Ituarte-Lima et al. 2020; Sandhu 2021). Yet, implementation

challenges persist across many developing countries. Limited enforcement mechanisms, public unawareness, and structural socio-political constraints often hinder the full realization of these rights, especially in rural regions (UNEP 2019a; Ituarte-Lima et al. 2020).

In Southeast Asia, disparities in environmental awareness and legal capacity are pronounced. Thailand and the Philippines have relatively advanced environmental education and participatory mechanisms, while countries like Myanmar lag behind due to prolonged political instability and fragmented institutional development (Ituarte-Lima et al. 2020; Sandhu 2021). Myanmar's 2008 Constitution includes a broad directive for environmental protection (Article 45), but it does not explicitly recognize environmental rights (Ministry of Information 2008). The National Environmental Policy (2019) encourages public participation and access to information, but in practice, these procedural rights are inconsistently applied (The Republic of the Union of Myanmar 2019). Weak law enforcement, overlapping institutional mandates, and minimal public consultations under Environmental Impact Assessment (EIA) procedures have been widely documented (Saluja et al. 2023, 2024).

Numerous studies emphasize that environmental awareness is foundational to effective governance and local engagement (Ajzen 1991; Grogan et al. 2013). While global campaigns like Earth Day have raised awareness, rural and low-income communities often remain excluded due to educational, linguistic, and technological barriers (Colchester and Lohmann 1993; Schlosberg 2004; Kountouris 2022). In Myanmar, decades of civil conflict and underinvestment in education have contributed to low levels of environmental knowledge, especially among rural and marginalized groups. Nonetheless, community-based programs supported by international and local NGOs have demonstrated promise in improving grassroots awareness (Saluja et al. 2023, 2024).

The importance of access to environmental information has been extensively discussed in the literature. The Aarhus Convention and other instruments identify information access as a prerequisite for informed public participation. Empirical studies from countries like Denmark and Germany demonstrate how transparent governance can enhance environmental outcomes (Newig and Fritsch 2009; Ekardt et al. 2018). In Southeast Asia, the Philippines has institutionalized mandatory disclosure mechanisms, such as under its Clean Air Act (Glover and Onn 2008; Kojima 2016), while Myanmar continues to struggle with digital infrastructure limitations, political constraints, and linguistic diversity (Hickey and Maria-Sube 2022; International IDEA 2022; Saluja et al. 2023, 2024).

The right to participate in environmental decision-making is also well-established in global frameworks. Participatory models, such as community forestry in Nepal (Agrawal and Ostrom 2001) and coastal resource management in Indonesia (Wever et al. 2012), have led to measurable improvements in conservation and local livelihoods. These models illustrate how inclusive governance can bridge gaps between legal frameworks and practical outcomes (Innes and Booher 2004; Reed 2008). In contrast, Myanmar's participatory mechanisms are often symbolic or poorly implemented. For example, public consultations mandated by EIA procedures are frequently rushed, underpublicized, or inaccessible to affected communities (Ministry of Environmental Conservation and Forestry 2015b; Than 2017; Ituarte-Lima et al. 2020; Than and Kraas 2020).

While global and regional research increasingly explores implementation barriers of environmental rights (Colchester and Lohmann 1993; Agrawal and Ostrom 2001; Agrawal 2007; Opperman et al. 2021; Umukoro and Oghenerukevwe 2022), Myanmar remains understudied. Most existing work focuses on institutional reforms, with little emphasis on community-level perspectives. Scholars such as Miller (2012) have critiqued the gap between formal legal recognition and actual exercise of environmental rights, especially among marginalized groups. Myanmar's rural communities face compounded challenges due to limited access to environmental information, lack of knowledge about regulatory frameworks, and political constraints on civic participation.

This study contributes to filling this gap by focusing on the procedural dimensions of environmental rights—namely, access to information and participation in decision-making—in a rural, ecologically sensitive, and politically complex context. By integrating international theory with local realities, the research provides a grounded understanding of how environmental rights are experienced and exercised on the ground.

Materials and Methods

Study Site

The study focused on local communities residing around Indawgyi Lake, an ASEAN Heritage Park and UNESCO Biosphere Reserve in Kachin State, Myanmar (*Figure 1*). The lake spans 815 km² and is a critical biodiversity hotspot in Southeast Asia. The community heavily depends on the lake's resources for fishing, agriculture, and ecotourism. However,

environmental threats such as deforestation, pollution, and illegal mining endanger the lake and impact the community's environmental rights.

Agriculture and fishing are primary income sources. Agriculture is vital for the local economy, with paddy, peanuts, and soybeans as major crops. Yield disparity exists due to soil quality differences and varying land-use practices. Fishing is significant, with a high demand for Indawgyi fish, but overfishing and illegal methods threaten sustainability. Sustainable practices and environmental protection are crucial for the well-being of the local community and the preservation of Indawgyi Lake's unique ecosystem (Than 2006).

However, the study area faces several environmental threats associated with tourism, deforestation, and gold mining. Also, suboptimal land use and overfishing create sustainability challenges. Recently, Indawgyi Lake became a destination of community involvement in tourism (CIT) aiming at enhancing local/regional development (Than and Kraas 2020). The forests and wetlands of the Indawgyi Lake region harbor endemic and globally threatened species of birds, fish, turtles, primates, and other mammals. However, according to an international conservation NGO Fauna & Flora International (FFI), which has been working at Indawgyi Lake since 2010, illicit logging has been increasing even though any form of logging activities are prohibited in the biosphere reserve by the existing regulations (Crane 2016). Besides, commercial gold mining started in Kachin State in 1995, and operations in the Indawgyi region began around 2000. Gold mines are concentrated along the lake's inflow streams and near certain villages, including NP, NTS, NML, NPD, MMK, and MN (Than 2006). Chinese companies are predominantly involved in mining activities (Mines and Communities 2006). Sedimentation, drug use, health problems, and

mercury contamination are among the visible and invisible threats associated with gold mining in the region (Than and Kraas 2020).

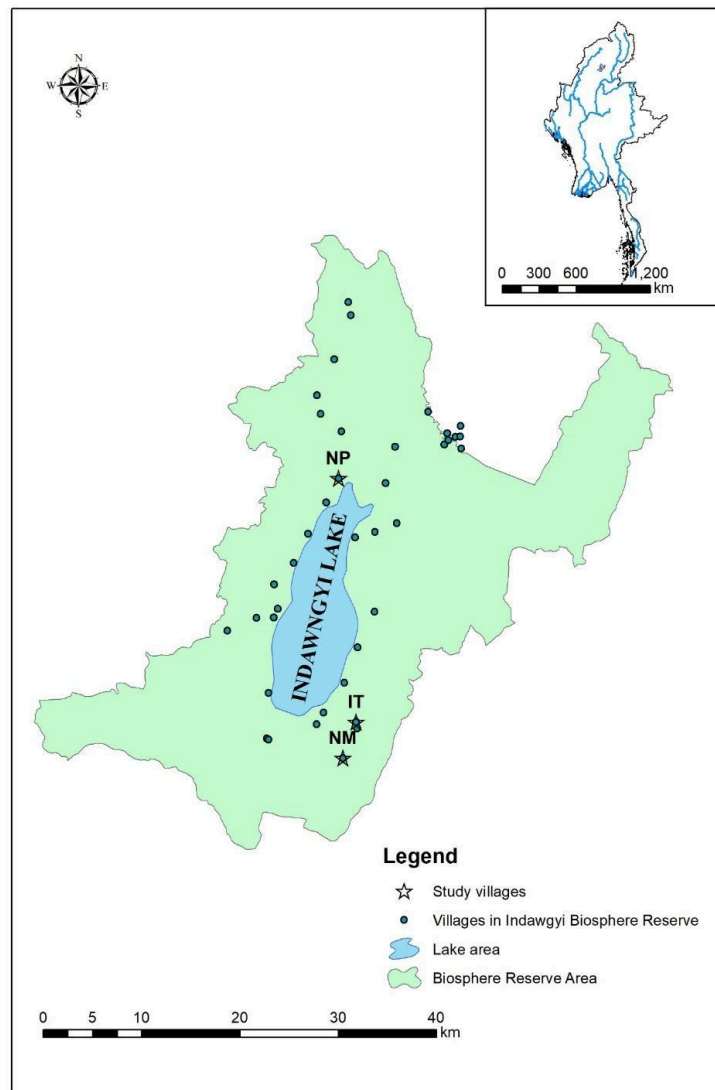


FIGURE 1. MAP SHOWING THE STUDY VILLAGES AROUND INDAWGYI LAKE, NORTHERN MYANMAR

This unique biodiversity, combined with the dependence of local communities on the lake's resources, underscores the need to assess the local community's environmental perspectives, including their rights. Therefore, we selected three villages (NP, IT, and NM villages) to conduct the field data collection. The selected villages reflect diverse environmental pressures. NP village is affected by ecotourism-related waste and land-use changes; IT village has experienced widespread deforestation; and NM village is directly

impacted by gold mining and related pollution. These sites were purposively chosen to capture a range of environmental governance challenges and local responses.

Research Design

The study employed a mixed-methods approach, combining qualitative and quantitative techniques to explore community perspectives on environmental rights, access to information, and participation in environmental governance. A case study design was adopted to generate context-specific insights, appropriate for understanding procedural environmental rights in politically and socially complex rural settings.

Data Collection

Data collection took place through two primary means: key informant interviews (KIIs) and individual household interviews (IHHs).

Key Informant Interviews (KIIs)

A total of 27 key informants (22 males and 5 females) were interviewed across the three villages (*Table 1*). Participants were purposively selected based on their knowledge of local environmental issues and their engagement in community-based activities. They included community leaders, CSO members, activists, and other stakeholders. Semi-structured interview guides covered topics such as environmental challenges, awareness, access to environmental information, and participation in decision-making. We interviewed them to gain insights into their perspectives on the local community's environmental rights and the challenges faced in protecting them using semi-structured questionnaires. The questionnaire covers nine sections: (1) introduction and ethical considerations, (2) introduction and general information of the key informant, (3) understanding environmental rights, (4) community awareness and knowledge, (5) environmental issues and challenges, (6) governmental and institutional involvement, (7) community participation and empowerment, (8) recommendations and future actions, and (9) conclusions. Interviews were conducted in Burmese and took approximately 30–45 minutes.

Individual Household Interviews (IHHs)

A total of 58 households (31 males, 27 females) were interviewed (*Table 1*) using in-depth, semi-structured questionnaires. Households were selected to reflect different livelihood activities and gender perspectives. The interviews focused on four key themes: awareness of

environmental issues, access to environmental information, rights to participate in decision-making, and challenges in asserting environmental rights. Interviews lasted about 45 minutes each and were conducted in the local language to ensure clarity.

TABLE 1. NUMBER OF RESPONDENTS (KII AND IHH) IN EACH STUDY VILLAGE

Village	KII			IHH		
	M	F	Total	M	F	Total
NP	10	-	10	10	10	20
IT	7	3	10	9	11	20
NM	5	2	7	12	6	18
Total	22	5	27	31	27	58

Data Analysis

Qualitative data from interviews were transcribed, coded, and analyzed thematically to identify patterns related to community awareness, governance experiences, and rights-based challenges. A descriptive statistical analysis of the household survey data was also conducted to quantify trends in environmental awareness, access to information sources, and participation levels. Triangulation of qualitative and quantitative data was used to strengthen validity and ensure coherence across different respondent groups.

Secondary data sources, including national environmental policies, legal frameworks, and reports from government agencies, local NGOs, and international organizations, were reviewed to contextualize findings and support interpretation.

Results

Environmental Awareness

Most respondents demonstrated a strong awareness of environmental changes occurring in their communities. Out of 58 households surveyed, 57 identified climate-related changes, including altered rainfall patterns and temperature shifts (

Figure 2). A substantial number of respondents also reported issues such as decreased fish catch (n=46), declining agricultural productivity (n=46), water pollution linked to mining

(n=46), deforestation (n=48), and biodiversity loss (n=49). Over half of the respondents (n=52) noted changes in land use due to external development pressures.

Key informants corroborated these concerns, consistently highlighting climate impacts, illegal gold mining, ecotourism-induced waste problems, and land degradation. The expressed concerns were often linked to perceived impacts on livelihoods, such as reduced access to agricultural land and fishery resources.



FIGURE 2. RECOGNITION OF LOCAL ENVIRONMENT CHANGES BY THE LOCAL COMMUNITIES IN STUDY VILLAGES

In terms of concern levels, 53 out of 58 households indicated active concern about local environmental issues (

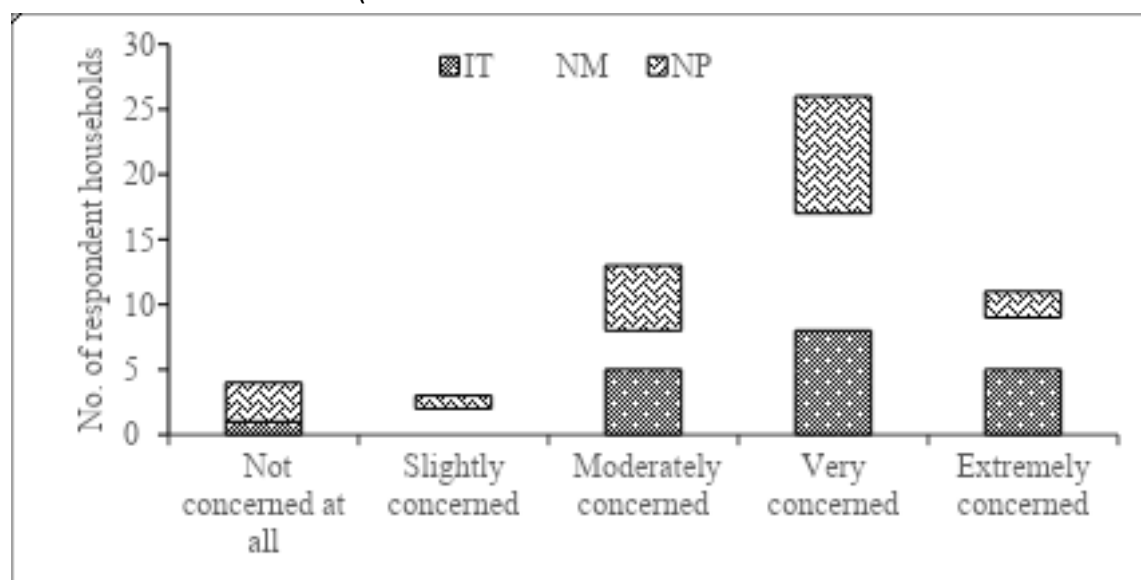


Figure 3), particularly those affecting their income or daily life. A minority of households (n=4) expressed limited concern, often due to preoccupation with daily survival activities such as wage labor.

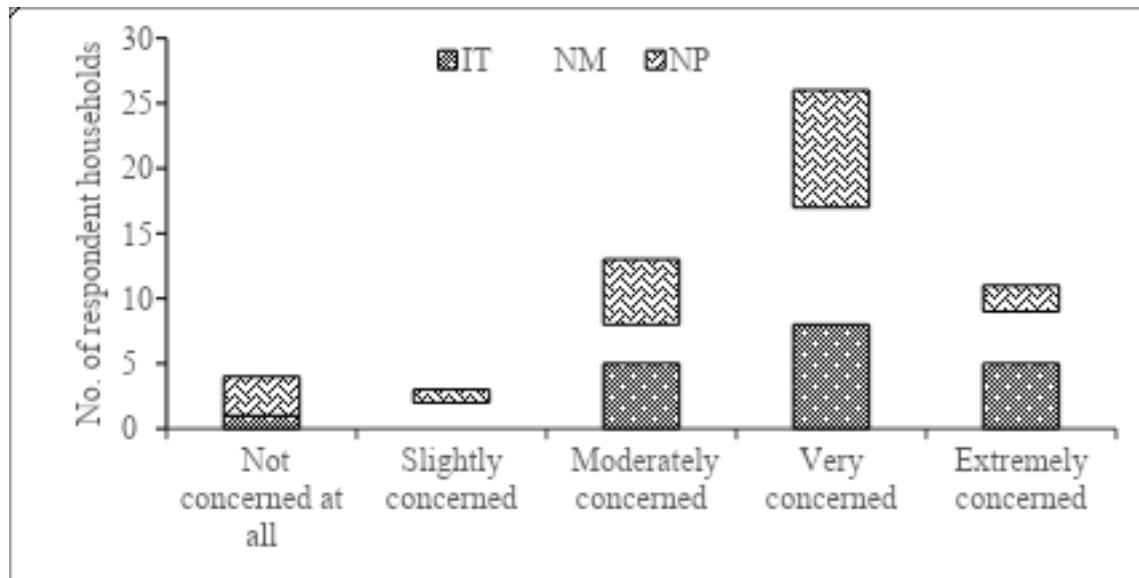


FIGURE 3. LEVEL OF CONCERNS ON ENVIRONMENTAL ISSUES BY LOCAL COMMUNITIES IN EACH STUDIED VILLAGE

Understanding of Environmental Regulations and Rights

When asked about awareness of environmental regulations, 28 respondents indicated some level of familiarity, while 26 reported no knowledge (Figure 4a). In contrast, awareness of environmental rights was much lower: only 10 households reported any familiarity with the concept (Figure 4b).

Interviews revealed confusion between environmental regulations and rights. Some respondents cited rules about fishing practices or reporting illegal activities, but few were able to distinguish between enforcement regulations and procedural rights such as access to information or participation in decision-making. Even among key informants, only a handful demonstrated a clear understanding of environmental rights as defined by international frameworks.

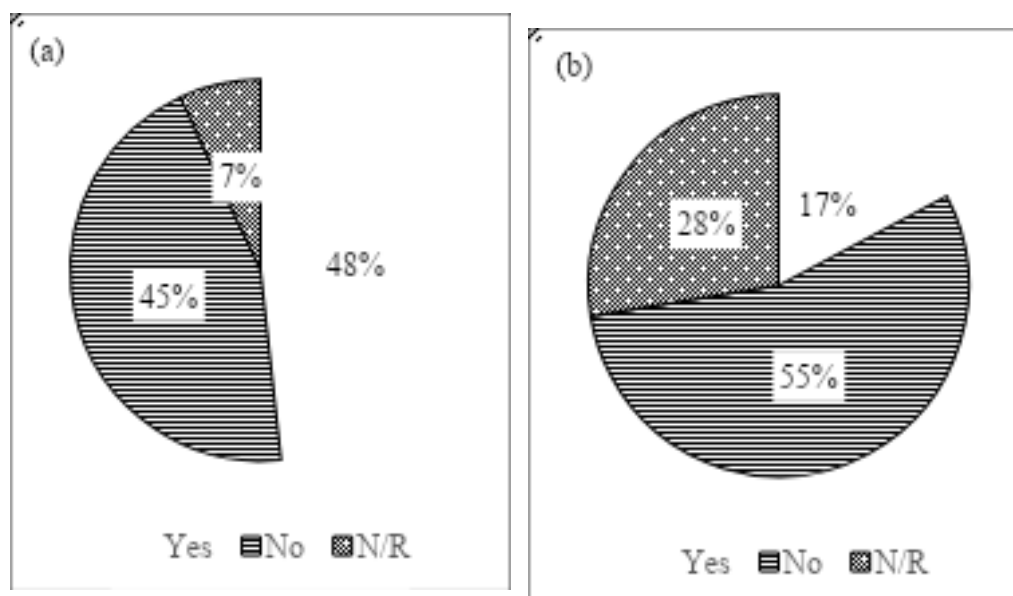


FIGURE 4. AWARENESS OF (A) ENVIRONMENTAL REGULATIONS, AND (B) ENVIRONMENTAL RIGHTS BY THE LOCAL COMMUNITIES IN INDAWGYI LAKE, NORTHERN MYANMAR

Access to Environmental Information

According to household interviews, 30 households noticed the importance of environmental information for their communities' well-being. Key informant interviews also confirmed that the local communities do not have any difficulties to access environmental information via various modes, despite some households indicating some difficulties in doing so. Local households have access to environmental information through various sources (

Table 2). In a traditional way, the community disseminates environmental information ($n = 21$). However, it is primarily accessible through digital media, including social media, TV, and radio ($n = 27$), as well as through CSOs/NGOs ($n = 21$), and at local community meetings and events ($n = 15$). Few households access environmental information through printed media such as newspapers and magazines ($n = 7$), and even fewer ($n = 3$) obtain it from governmental institutions.

TABLE 2. NUMBER OF RESPONDENT HOUSEHOLDS WHO HAVE ACCESS TO ENVIRONMENTAL INFORMATION IN STUDIED VILLAGES

Village	Traditional knowledge	Through digital media (social media/ TV/ Radio)	Governmental Institutions	CSOs/ NGOs	Newspaper/ magazines	Local community meetings and events
IT	4	11	-	11	2	4
NM	4	11	2	6	4	6
NP	13	5	1	4	1	5
Total	21	27	3	21	7	15

According to household surveys, 18 respondents found it difficult to access environmental information, while the remaining respondents (n = 38) reported varying levels of ease in accessing such information (*Table 3*).

TABLE 3. NUMBER OF RESPONDENT HOUSEHOLDS FOR EASE OF INFORMATION ACCESSIBILITY IN STUDIED VILLAGES

Village	Level of easiness of information accessibility				
	Not easy	Slightly easy	Moderately easy	Very easy	Extremely easy
IT	7	1	8	4	-
NM	2	9	5	1	-
NP	9	3	7	-	-
Grand Total	18	13	20	5	-

Based on the household survey, 19 households reported their challenges when trying to access environmental information in their community. Two respondents mentioned struggling with livelihoods, leading to decreased awareness and attention to environmental information. Additionally, two respondents noted a decrease in awareness-raising campaigns due to political unrest and restrictions on freedom of expression. Other challenges included local armed forces (n =1), lack of rule of law (n=1), and corruption (n=1). Therefore, this study reveals that effective governance requires not just legal provisions but also mechanisms that ensure information is accessible and actionable.

When asked about barriers to accessing environmental information, 22 households mentioned limited awareness-raising efforts, 10 households highlighted language barriers, 8 households stated limited information sources, and 4 households identified a lack of internet accessibility (*Table 4*). This finding supports that Myanmar's weak digital infrastructure and lack of multilingual dissemination hinder public awareness and engagement.

TABLE 4. NUMBER OF RESPONDENT HOUSEHOLDS ABOUT THE BARRIERS TO INFORMATION ACCESS

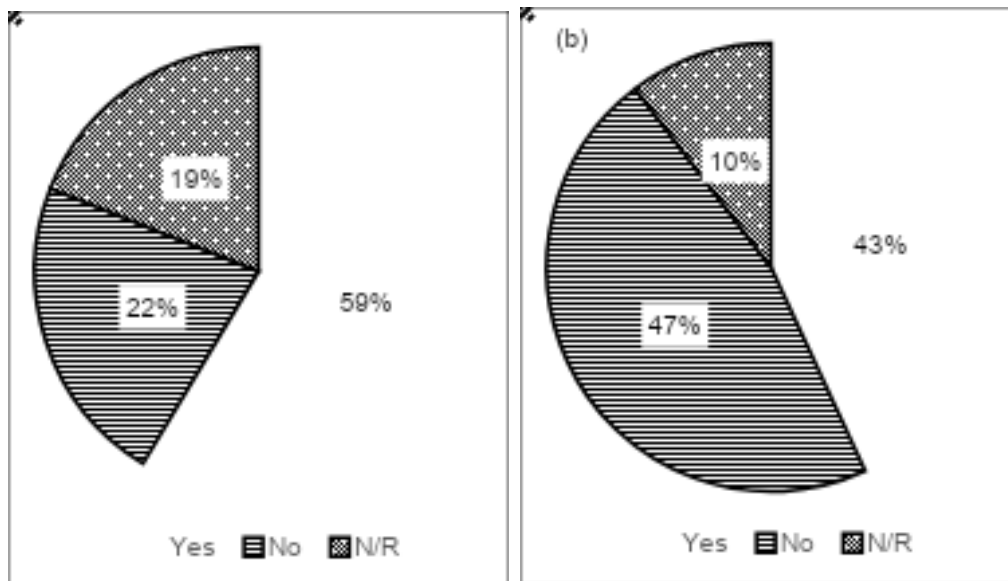
Barriers to access to environmental information	Number of respondent households
Weakness of awareness raising	22
Language barriers	10
Limited sources of information	8
Lack of internet	4

Participation in Environmental Decision-making

In terms of local community involvement in environmental activities such as local cleaning-up (e.g. waste collection) events and tree-planting activities, 34 out of 57 households (59%) indicated they could participate in decision-making and planning for environmental resources (*Figure 5a*). This finding contradicted the report by key informant interviews. Based on key informant interview, only one out of 27 key informants could be involved at the management level, but most of them (9 key informants) do not have a chance to participate in the decision-making process while the remaining informants are likely to participate in some environmental conservation activities. According to three key informants from NP village, they were limited to participate in the decision-making process due to lack of knowledge, limited information provided, and strict rules set by the government office.

When we inquired about their willingness to participate in decision-making process, 25 households (43%) expressed their strong desire to participate in decision making and planning of environmental activities (*Figure 5b*). Therefore, it is still necessary to strengthen

their understanding on the right to participate in decision-making and planning of environmental activities.



Almost all respondents, except 5 households, agreed that local people should be involved in decision-making processes concerning environmental management and conservation. To enhance access to environmental information and promote greater participation in decision-making and resource planning, respondents suggested the need for government and organizational initiatives. These include awareness campaigns through competitions, exhibitions, vinyl posters, and flyers (n=27), training and education programs (n=5), internet accessibility (n=5), networking opportunities (n=2), and grievance mechanisms (n=1).

FIGURE 5. NUMBER OF RESPONDENT HOUSEHOLDS ABOUT (A) OPPORTUNITIES TO GET INVOLVED IN ENVIRONMENTAL ACTIVITIES AND (B) THEIR WILLINGNESS TO PARTICIPATE IN DECISION-MAKING AND PLANNING OF ENVIRONMENTAL ACTIVITIES

Discussion

This study reveals substantial environmental awareness among communities living around Indawgyi Lake, yet also highlights critical gaps in understanding environmental regulations and rights. While respondents demonstrated familiarity with visible environmental issues—such as climate change, deforestation, mining-related pollution, and biodiversity loss—their knowledge of formal governance frameworks and procedural rights remains limited. This finding echoes previous research in Southeast Asia, which shows that public awareness of environmental challenges often outpaces understanding of

environmental governance structures, particularly in rural areas (Ituarte-Lima et al., 2020; Saluja et al., 2023).

The confusion between environmental regulations and rights is particularly notable. Similar to findings by Miller (2012), this study illustrates how legal complexity and poor dissemination of information can obscure citizens' understanding of procedural rights. In Myanmar, where the constitution does not explicitly recognize environmental rights, and where governance structures are weakened by overlapping mandates and political instability, these misunderstandings are unsurprising. Nonetheless, they pose significant barriers to meaningful community participation in environmental decision-making.

Access to environmental information—one of the cornerstones of procedural environmental rights as defined in the Aarhus Convention—is characterized by inequality. While digital media and local CSOs serve as primary sources of information, barriers such as limited outreach, language challenges, and infrastructural deficits continue to restrict access. These findings align with international reports noting that transparency and inclusiveness in information systems are key to achieving equitable environmental governance (UNEP, 2021; International IDEA, 2023). The findings also confirm that reliance on digital platforms alone is insufficient in areas with limited connectivity and digital literacy.

Participation in environmental decision-making was reported as minimal, particularly in formal processes such as environmental planning or impact assessments. While many community members expressed willingness to participate, actual opportunities were rare and often restricted to symbolic engagement in community clean-up events. This finding supports Reed's (2008) argument that genuine participation requires more than legal frameworks—it necessitates enabling conditions, including access to information, trust-building mechanisms, and institutional accountability.

The contrast between high willingness to participate and low levels of actual involvement suggests an untapped potential for community-based governance in Myanmar. Lessons from other countries in the region are instructive. For instance, Nepal's community forestry programs and Indonesia's participatory coastal management have shown how local involvement can improve environmental outcomes and increase community resilience (Innes & Booher, 2004; Reed, 2008). Adopting similar approaches in Myanmar would require

not only institutional reform but also a cultural shift toward inclusivity and transparency in decision-making.

This study also points to the important role of local NGOs, CSOs, and informal leaders in shaping environmental consciousness and bridging governance gaps. However, these actors often operate with limited resources and without formal recognition. Strengthening their role through capacity-building and collaborative partnerships could enhance local environmental governance and accountability. At the policy level, existing laws and policies, such as Myanmar's Environmental Conservation Law (2012) and National Environmental Policy (2019), provide a foundation for promoting procedural rights. Yet, enforcement remains weak, and implementation at the local level is inconsistent.

In sum, the findings from Indawgyi Lake reflect broader trends in resource-dependent, rural communities across the Global South: awareness of environmental degradation exists, but without institutional support, legal clarity, and participatory mechanisms, communities remain disempowered. Integrating traditional knowledge with formal governance, investing in multilingual and culturally relevant information channels, and establishing inclusive platforms for decision-making are essential steps forward.

Conclusion and Policy Implications

This study examined how rural communities around Indawgyi Lake in Myanmar understand and engage with procedural environmental rights, focusing on awareness, access to environmental information, and participation in environmental decision-making. The findings reveal a paradox: while local communities express strong concern about environmental degradation and a willingness to participate in governance, they face persistent barriers to exercising their rights. These include limited understanding of environmental regulations and rights, restricted access to reliable information, and minimal inclusion in decision-making processes.

These findings contribute to broader scholarship on environmental governance in politically fragile and resource-dependent settings. They underscore the limitations of legal frameworks in the absence of implementation capacity, institutional accountability, and civic empowerment. In particular, the gap between willingness and opportunity for public

participation highlights the need to move beyond symbolic inclusion toward more substantive, inclusive models of environmental governance.

The research affirms the relevance of global frameworks such as the Aarhus Convention and Rio Declaration, while emphasizing the importance of local adaptation. Procedural rights cannot be realized through legal texts alone; they require operational systems, transparent institutions, and culturally and linguistically accessible communication channels. Moreover, the role of community-based organizations and informal leaders is critical in contexts where state capacity is limited or uneven.

Policy Recommendations

(a) Strengthen Environmental Education and Awareness Campaigns

Public awareness of procedural environmental rights should be integrated into formal and non-formal education systems. Government agencies, NGOs, and CSOs should collaborate to deliver targeted awareness programs that are culturally appropriate and multilingual.

(b) Enhance Access to Environmental Information

Establishing village-level environmental information hubs, improving internet access, and using locally trusted networks to disseminate information can reduce current information asymmetries. Policies should mandate timely and transparent information-sharing, especially for environmental assessments and planning processes.

(c) Institutionalize Participatory Mechanisms:

Community consultation processes should be standardized and made genuinely inclusive, with clear guidelines to ensure the participation of women, indigenous groups, and other marginalized populations. Village and township-level governance bodies should be trained and mandated to uphold participatory principles.

(d) Support Community-Based Governance Models:

Drawing lessons from Nepal and Indonesia, Myanmar could strengthen decentralized environmental management by formalizing and funding community forestry, watershed committees, or village conservation groups that link local knowledge with institutional processes.

(e) Clarify and Harmonize Legal Frameworks:

Myanmar's existing legal and policy instruments, including the Environmental Conservation Law (2012), Forest Law (2018), and National Environmental Policy (2019), should be harmonized to clearly define procedural rights and enforcement responsibilities. Alignment with emerging democratic frameworks, such as the Federal Democracy Charter, could further legitimize environmental rights as part of broader human rights.

In politically fragile contexts, inclusive environmental governance is not only a legal or institutional challenge—it is a social imperative. Enhancing procedural rights at the community level can foster local ownership of environmental initiatives, increase resilience, and serve as a foundation for broader democratic engagement.

References

- Adger WN, Benjaminsen TA, Brown K, Svarstad H (2001) Advancing a political ecology of global environmental discourses. *Dev Change* 32:681–715
- Agrawal A (2007) Forests, governance, and sustainability: common property theory and its contributions. *Int J commons* 1:111–136
- Agrawal A, Ostrom E (2001) Collective action, property rights, and decentralization in resource use in India and Nepal. *Polit Soc* 29:485–514
- Ajzen I (1991) The theory of planned behavior. *Organ Behav Hum Decis Process* 50:179–211. [https://doi.org/https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T)
- Amin R, Nath H, Amin R (2023) Environmental Justice and Education: Bridging the Gap between Ecology, Equity, and Access. *J Adv Zool* 44:1075–1082. <https://doi.org/10.17762/jaz.v44iS-3.1061>
- Amnesty International (2017) Myanmar: Mountain of trouble: Human rights abuses continue at Myanmar's Letpadaung mine. <https://www.amnesty.org/en/documents/asa16/5564/2017/en/>. Accessed 23 Feb 2025
- Andrews RNL (2006) Managing the environment, managing ourselves: A history of American environmental policy. Yale University Press
- Banda LOL, Banda CV, Banda JT, et al (2024) Assessing farmers' knowledge of environmental policy along the Ayeyarwady River: Strides towards the Indian Ocean marine life safety. *Heliyon* 10:e35503. <https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e35503>
- Bell S, McGillivray D, Pedersen OW, et al (2017) Environmental law. Oxford University Press
- Bhandari, Bishnu B. Abe O (2000) Environmental Education in the Asia-Pacific Region: Some Problems and Prospects. *Int Rev Environ Strateg* 1:57–77
- Bodansky D (1999) The legitimacy of international governance: a coming challenge for international environmental law? *Am J Int Law* 93:596–624
- Bodin Ö (2017) Collaborative environmental governance: achieving collective action in social-ecological systems. *Science* (80-) 357:eaan1114
- Brondizio ES, Aumeeruddy-Thomas Y, Bates P, et al (2021) Locally based, regionally manifested, and globally relevant: Indigenous and local knowledge, values, and practices for nature. *Annu Rev Environ Resour* 46:481–509
- Business and Human Rights Resource Center (2024) Myanmar: Letpadaung Copper Mine project sparks ongoing protests, land disputes & security concerns. <https://www.business-humanrights.org/en/latest-news/myanmar-letpadaung-copper-mine-project-sparks-o>

- ngoing-protests-land-disputes-security-concerns/. Accessed 23 Feb 2025
- Children of the Mekong Education in Myanmar: challenges created by an unstable political environment. <https://www.childrenofthemekong.org/education-in-myanmar-challenges-created-by-an-unstable-political-environment/>. Accessed 16 Dec 2024
- Chirisa I, Archimedes M (2013) Environmental Rights as a Substantive Area of the Zimbabwean Constitutional Debate: Implications for Policy and Action. *South Peace Rev J* 2:104–121
- Colchester M, Lohmann L (1993) The struggle for land and the fate of the forests. Zed Books and The Ecologist and World Rainforest Movement
- Committee Representing Pyidaungsu Hluttaw (2021) Federal Democracy Charter
- Crane B (2016) Illegal logging “ravaging” Myanmar’s Indawgyi Lake Wildlife Reserve. In: Mongabay Ser. Glob. For. <https://news.mongabay.com/2016/11/illegal-logging-ravaging-myanmars-indawgyi-lake-wildlife-reserve/>. Accessed 28 Feb 2024
- Cuthill M, Fien J (2005) Capacity building: Facilitating citizen participation in local governance. *Aust J public Adm* 64:63–80
- De Sadeleer N (2020) Environmental principles: from political slogans to legal rules. Oxford University Press
- Devarhubli G, Shrivastava A (2024) The advancement of environmental procedural rights in India: an analysis of issues, problems and prospects. *Cogent Soc Sci* 10:2312949. <https://doi.org/10.1080/23311886.2024.2312949>
- Dietz T (2020) Earth Day: 50 Years of Continuity and Change in Environmentalism. *One earth* (Cambridge, Mass.) 2:306–308
- DW (2015) Protecting Lake Indawgyi
- EJAtlas (2023) Gold mining in Indawgyi Lake, Myanmar. <https://ejatlas.org/print/gold-mining-in-indawgyi-lake>. Accessed 23 Feb 2025
- Ekardt F, Wieding J, Zorn A (2018) Paris agreement, precautionary principle and human rights: zero emissions in two decades? *Sustainability* 10:2812
- Ellis SC (2005) Meaningful consideration? A review of traditional knowledge in environmental decision making. *Arctic* 66–77
- European Environment Agency (2024) Environmental inequalities. <https://www.eea.europa.eu/en/topics/in-depth/environmental-inequalities>. Accessed 15 Dec 2024
- Forsyth T (2021) MYANAMR: CLIMATE CHANGE COMMUNICATION AND EDUCATION. In: *Monit. Eval. Clim. Chang. Commun. Educ. Proj. Rep.* <https://education-profiles.org/eastern-and-south-eastern-asia/myanmar/~climate-change-communication-and-education>. Accessed 29 Dec 2024
- Glover D, Onn LP (2008) The environment, climate change and natural resources in southeast asia: issues and challenges. *ASEAN Econ Bull* 1–6
- Glucker AN, Driessen PPJ, Kolhoff A, Runhaar HAC (2013) Public participation in environmental impact assessment: why, who and how? *Environ Impact Assess Rev* 43:104–111
- Greene FO (2020) International Environmental Law: History and milestones. In: *Interam. Assoc. Environ. Def.* <https://aida-americas.org/en/blog/international-environmental-law-history-and-milestones>. Accessed 24 Nov 2024
- Grogan K, Birch-Thomsen T, Lyimo J (2013) Transition of Shifting Cultivation and its Impact on People’s Livelihoods in the Miombo Woodlands of Northern Zambia and South-Western Tanzania. 41:77–92. <https://doi.org/https://doi.org/10.1007/s10745-012-9537-9>
- Hart RA (2013) Children’s participation: The theory and practice of involving young citizens in community development and environmental care. Routledge
- Hickey SP., Maria-Sube E (2022) Myanmar’s Environment and Climate Change Challenges
- Hildén M, Mäkinen K, Jantunen J, et al (2016) Needs assessment for effective implementation of the Environmental Conservation Law

- Initiative D (2024) Local stewardship in Myanmar. <https://www.darwininitiative.org.uk/news/2024/01/15/local-stewardship-in-myanmar/>. Accessed 18 Dec 2024
- Innes JE, Booher DE (2004) Reframing public participation: strategies for the 21st century. *Plan theory Pract* 5:419–436
- International IDEA (2022) MYANMAR’S FEDERAL DEMOCRACY CHARTER: ANALYSIS AND PROSPECTS. Stockholm, Sweden
- Ituarte-Lima C, Bernard V, Paul D, et al (2020) Prosperous and green in the Anthropocene: The human right to a healthy environment in Southeast Asia. Lund, Sweden
- Khaing MT, Hawng D (2021) Study on the Water Quality of Indawgyi Lake Affected by Surroundings. *Int J Environ Rural Dev* 12:72–78
- Kojima M (2016) Environmental issues in Southeast Asia. *Basic Stud Environ knowledge, Technol Eval Strateg Introd to East Asia Environ Stud* 55–67
- Kollmuss A, Agyeman J (2002) Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ Educ Res* 8:239–260. <https://doi.org/10.1080/13504620220145401>
- Kountouris Y (2022) Awareness days and environmental attitudes: The case of the “Earth Hour.” *Ecol Econ* 195:107367. <https://doi.org/https://doi.org/10.1016/j.ecolecon.2022.107367>
- Lemos MC, Agrawal A (2006) Environmental governance. *Annu Rev Environ Resour* 31:297–325
- Magallona M, Malayang III BS (2001) Environmental governance in the Philippines. *Environ Gov Southeast Asia*
- May JR, Daly E (2015) Global environmental constitutionalism. Cambridge University Press
- Mensah J (2019) Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Soc Sci* 5:1653531. <https://doi.org/10.1080/23311886.2019.1653531>
- Miller C (2012) Environmental rights: Critical perspectives. Routledge
- Millner F (2011) Access to environmental justice. *Deakin L Rev* 16:189
- Mines and Communities (2006) South Asia Update. <http://www.minesandcommunities.org/article.php?a=372>. Accessed 4 Jul 2024
- Ministry of Environmental Conservation and Forestry (2015a) ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE
- Ministry of Environmental Conservation and Forestry (2015b) Myanmar’s Intended Nationally Determined Contribution - INDC
- Ministry of Information (2008) Constitution of the Republic of the Union of Myanmar
- National Research Council (2008) Public participation in environmental assessment and decision making. National Academies Press
- Newig J, Challies E, Jager NW, et al (2018) The Environmental Performance of Participatory and Collaborative Governance: A Framework of Causal Mechanisms. *Policy Stud J* 46:269–297. <https://doi.org/https://doi.org/10.1111/psj.12209>
- Newig J, Fritsch O (2009) Environmental governance: participatory, multi-level—and effective? *Environ policy Gov* 19:197–214
- Nicome A, Alberti PM, Alvarado CS (2024) Down to Earth: U.S. adults back environmental justice, but policy awareness falls short. <https://www.aamchealthjustice.org/news/polling/down-to-earth>. Accessed 15 Dec 2024
- Nomura K, Abe O (2008) The Status of Environmental Education in the ASEAN Region: Survey Results and Analysis
- Okai O (2022) The critical connection between human rights and our natural world. <https://www.undp.org/blog/critical-connection-between-human-rights-and-our-natural-world>
- Olenjoro ES (2015) Assessment of Environmental Awareness, Sensitivity and Concerns of local communities towards natural Resources Conservation Surrounding Ngorongoro Forest Reserve

- Opperman L, Connalin J, Opperman AW, et al (2021) Assessment of the Status of the Fishery of Indwagyi Lake, Myanmar Using Traditional Ecological Knowledge. *Asian J Fish Aquat Res* 15:27–35
- Peet R, Watts M (2004) *Liberation ecologies: environment, development and social movements*. Routledge
- Reed MS (2008) Stakeholder participation for environmental management: a literature review. *Biol Conserv* 141:2417–2431
- Saluja R, Lwin TH, Maung W, Piman T (2024) Empowering communities in the Upper Chindwin Basin of Myanmar on wetlands conservation. <https://www.sumernet.org/story/empowering-communities-in-the-upper-chindwin-basin-of-myanmar-through-hands-on-training-on-watershed-and-wetlands-conservation-a>. Accessed 18 Dec 2024
- Saluja R, Prasad S, Lwin TH, et al (2023) Assessment of Community Dependence and Perceptions of Wetlands in the Upper Chindwin Basin, Myanmar. *Resources* 12:112
- Sandhu SC (2021) Environmental Governance in the Philippines: A Pathway to Sustainable Development through the Effective Management of Natural Assets. *Diliman*
- Schlosberg D (2004) Reconceiving Environmental Justice: Global Movements And Political Theories. *Env Polit* 13:517–540. <https://doi.org/10.1080/0964401042000229025>
- Schlosberg D, Craven L (2019) *Sustainable materialism: Environmental movements and the politics of everyday life*. Oxford University Press
- Schulte WJ, Baird MH (2018) Myanmar's Nascent Environmental Governance System. *Nat Resour Environ* 33:21–25
- Sirianni C (2009) *Investing in democracy: Engaging citizens in collaborative governance*. Brookings Institution Press
- Stern MJ, Powell RB, Frensey BT (2022) Environmental education, age, race, and socioeconomic class: An exploration of differential impacts of field trips on adolescent youth in the United States. *Environ Educ Res* 28:197–215. <https://doi.org/10.1080/13504622.2021.1990865>
- Stockholm Environment Institute (2021) Community-based integrated catchment management to conserve the Upper Chindwin River Basin. <https://www.sei.org/projects/community-based-water-management-chindwin/>. Accessed 18 Dec 2024
- Than HH (2006) Gold mining on a commercial scale in Kachin State, Myanmar
- Than ZM (2017) *Socio-Economic Development of Indawgyi Lake, Myanmar*. Franz Steiner Verlag
- Than ZM, Kraas F (2020) Tourism Development in a Nature Protected Environment: Indawgyi Lake Area. *Journal of the Myanmar Academy of Arts and Science, Special Issue. Research and Innovation for Sustainable Development in Asia. Sub-Theme III: Di*
- The Pyidaungsu Hluttaw (2012) *The Environmental Conservation Law*
- The Pyihtaungsu Hluttaw (2018) *Forest Law 2018*
- The Pyihtaungsu Hluttaw (2012) *The Ward or Village Tract Administration Law*. Myanmar
- The Republic of the Union of Myanmar (2019) *National Environmental Policy of Myanmar*
- Umukoro B, Oghenerukevwe I (2022) Conceptual Challenges to the Recognition and Enforcement of the Right to Clean, Safe and Healthy Environment. *J Environ Law Policy*
- UN Human Right Council ; (2024) 56th session of the Human Rights Council. <https://www.ohchr.org/en/hr-bodies/hrc/regular-sessions/session56/regular-session>. Accessed 4 Jul 2024
- UNECE (1998) *CONVENTION ON ACCESS TO INFORMATION, PUBLIC PARTICIPATION IN DECISION-MAKING AND ACCESS TO JUSTICE IN ENVIRONMENTAL MATTERS*. done at Aarhus, Denmark
- UNEP (2021a) *Advancing Environmental Rights: What are environmental rights?* <https://www.unep.org/explore-topics/environmental-rights-and-governance/what-we-do/advancing-environmental-rights/what>
- UNEP (2021b) *Environmental Rule of Law: First Global Report*. <https://www.unep.org/resources/assessment/environmental-rule-law-first-global-report>. Accessed 4 Jul

2024

UNEP (2019a) Environmental Rule of Law: First Global Report

UNEP (2019b) Dramatic growth in laws to protect environment, but widespread failure to enforce, finds report.
<https://www.unep.org/news-and-stories/press-release/dramatic-growth-laws-protect-environment-widespread-failure-enforce>

UNESCO Myanmar Country Profile.
<https://www.unesco.org/sdg4education2030/en/knowledge-hub/myanmar-country-profile>. Accessed 26 Dec 2024

United Nations (1972) United Nations Conference on the Human Environment.
<https://www.un.org/en/conferences/environment/stockholm1972>

United Nations (1948) Universal Declaration of Human Rights.
<https://www.un.org/en/about-us/universal-declaration-of-human-rights>

Victor DG, Raustiala K, Skolnikoff EB (1998) The implementation and effectiveness of international environmental commitments: Theory and practice. MIT press

Warner K, Hamza M, Oliver-Smith A, et al (2010) Climate change, environmental degradation and migration. Nat Hazards 55:689–715. <https://doi.org/10.1007/s11069-009-9419-7>

Wever L, Glaser M, Gorris P, Ferrol-Schulte D (2012) Decentralization and participation in integrated coastal management: Policy lessons from Brazil and Indonesia. Ocean Coast Manag 66:63–72

Win HH (1999) Movements of Environmental Education in Myanmar. 筑波社会科学研究 18:

World Justice Project (2024) Rule of Law Index.
<https://worldjusticeproject.org/rule-of-law-index/global/2024/Myanmar/>. Accessed 19 Dec 2024

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