YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME

A STUDY OF COMMUNITY PERCEPTIONS ON LOCAL MINING PROJECTS

(Case Study on Myaing Ga Lay Area, Hpa-an Township)

SAW SEIN HTWE
EMPA – 78 (20th BATCH)

JUNE, 2025

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A STUDY OF COMMUNITY PERCEPTIONS ON LOCAL MINING PROJECTS
(Case Study on Myaing Ga Lay Area, Hpa-an Township)

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Public Administration (MPA)

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This is to certify that this thesis entitled **"A STUDY OF COMMUNITY PERCEPTIONS ON LOCAL MINING PROJECTS (Case Study on Myaing Ga Lay Area, Hpa-an Township)"**, submitted as a partial fulfilment towards the requirements for the Degree of Master of Public Administration has been accepted by the Board of Examiners.

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ABSTRACT

This study explores community perceptions of a large-scale limestone mining project in the Myaing Ka Lay area of Hpa-an Township, focusing on its implications for community engagement. Total 130 respondents from 6 villages near mining site participated in the survey. Using a descriptive method based on primary data from structured questionnaires and secondary sources, the study classifies community responses into five thematic areas: demographics, environment, economy, society, and governance. The findings highlight concerns over environmental and social harm, minimal economic benefits, and insufficient community involvement in decision-making. While most respondents acknowledge the environmental degradation caused by mining, they express skepticism about local economic gains and highlight social disruptions such as increased migration and disputes. Governance was viewed as weak, despite some recognition of initiatives like local committees and spatial planning. It is suggested that enhancing transparency, inclusive decision-making, legal support, and effective communication to build trust and ensure community voices are integrated into mining governance.

ACKNOWLEDGEMENTS

Firstly, grateful acknowledgment goes to Dr. Tin Tin Htwe, Rector of Yangon University of Economics for allowing me an opportunity to write this thesis wisdom granted to EMPA students.

I am deeply grateful to my supervisor, Dr. Thet Mon Soe, Lecturer at Yangon University of Economics, whose invaluable guidance, insightful feedback, and steadfast support have been pivotal in shaping this thesis. Her expertise and dedication played a crucial role in its successful completion.

I wish to thank Professor Dr. Su Su Myat, Program Director, Head of the Department of Applied Economics, Yangon University of Economics for her kind encouragement to complete this paper.

Furthermore, I would like to take this opportunity to extend my gratitude to all lecturers and instructors of the Department of Applied Economics, Yangon University of Economics, for importing valuable knowledge, support, and guidelines.

I extend my heartfelt thanks to my colleagues and friends from the Karen State CSO network for their unwavering support, and to all the respondents from the Myaing Ka Lay area for their valuable recommendations and assistance in data collection under challenging circumstances

My sincere thanks go to all my classmates and friends from the EMPA (20th Batch) for their friendship, shared knowledge, and support in every aspect during the completion of this thesis. I also extend my apologies for not being able to acknowledge individually all those whom I may have unintentionally omitted above.

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LIST OF ABBREVIATIONS

ASM	Artisanal and Small-Scale Mining
CSR	Corporate Social Responsibility
DOM	Department of Mines
EIA	Environmental Impact Assessment
EU	European Union
FPIC	Free, Prior and Informed Consent
GRI	Global Reporting Initiative
ICG	International Crisis Group
ICMM	International Council on Mining & Metals
IFC	International Finance Corporation
IEE	Initial Environmental Examination
MEITI	Myanmar Extractive Industries Transparency Initiative
MONREC	Ministry of Natural Resources and Environmental Conservation
SLO	Social License to Operate
ISO	International Organization for Standardization
CO_2 / CO2	Carbon Dioxide
PM2.5	Particulate Matter (diameter ≤ 2.5 micrometers)
SWOT	Strengths, Weaknesses, Opportunities and Threats
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
UN	United Nations
NGO	Non-Governmental Organization

CHAPTER I
INTRODUCTION

1.1 Rationale of the Study

In general, 250–300 million people worldwide depend on mining for their livelihood, and 43 million people are directly employed in the large and small-scale mining sectors worldwide (MMSD, 2002).

Over the past two years, the mining industry has had an impact on the sociocultural, economic, and environmental sustainability of these communities in Canada as well as others worldwide (Veiga et al, 2001; Bowes-Lyon et al, 2009). The idea of sustainable development in the context of mining has gained international attention and recognition as a result of the diverse effects that mining has on communities worldwide (Hilson, 2000; Azapagic 2004).

Concerns about how to guarantee sustainable development—the capacity of present generations to satisfy their needs without jeopardizing the capacity of future generations to satisfy their own—have grown globally during the last ten years. Public pressure has compelled mining companies to modify their operations to conform to this paradigm. Although there is no denying that products made from minerals and metals have significantly contributed to sustainable development, it is impossible to overlook the negative effects that are juxtaposed. Governments, non-governmental organizations, the general public, and other stakeholders have taken notice of the detrimental effects that mining activities have on the environment and society. A major issue facing the mining sector is how it can support sustainable development.

Presently, the majority of significant mining corporations generate yearly, audited sustainability reports that detail their sustainability effects. Following environmental compliance (and related standards like ISO 14001.), corporate social responsibility (CSR) initiatives, social license to operate (SLO), and now sustainability reporting with guidelines like the Global Reporting Initiative (GRI), the mining sector has advanced.

Additionally, a related idea in contemporary mine or project management is obtaining and upholding a social license to operate as well as free, prior, and informed consent. Mines must actively involve their stakeholders in order to obtain informed consent and a social license to operate. Engaging stakeholders is now essential to managing mines or projects for long-term success. The best approach for a mine operator to reduce community-related risks and accomplish long-term results (like informed consent and social license to operate) is through community engagement. The primary factors or problems influencing the opinions of the community regarding a mining project and the ways in which these factors influence those opinions should be elicited through community engagement.

Guidelines for proper stakeholder engagement have been proposed by a number of organizations, including the International Council on Mining & Metals (ICMM) and the International Finance Corporation (IFC). In this case mines and mining businesses have a role to play in the sustainable development of their host communities and the world, at large.

Sustainable mining has received much attention in recent years as a consequence of the negative impacts of mining and public awareness. The mining businesses have both an interest and a responsibility to incorporate sustainable development concepts into their long-term business strategy. A mining project and its stakeholders are interdependent. Many mining companies realize the important role of other stakeholders and emphasize stakeholder engagement in the process of mine planning and design, permitting, operation and closure. Mine managers are gradually coming to understand the special importance of the host community and are attempting to address this issue. The host community's perception of a mining project is often different from the perception of the mine's management (or proponents) and other stakeholders.

The community's perception of a mining project is an aggregation of the individual perceptions of the community members. This study, focus on the factors affecting individuals' choices and how to acquire good information on individual preferences to explain community perceptions. There are dominant factors that affect community perceptions of mining projects. These factors are classified into five categories: environmental, economic, social, governance and demographic factors.

Myanmar is a country with rich natural resources. Myanmar's economy has transitioned from agriculture to industry, leading to intensified resource extraction and

environmental degradation (NCEA & UNEP, 2008). Rapid industrialization plays a key role for the growth of the country, on the other hand public participation in Environmental Impact Assessment (EIA) is crucial for sustainable development. Despite the enactment of the EIA procedure in 2015, which mandates public consultation, challenges remain in effectively engaging stakeholders (Environmental Impact Assessment Procedure, n.d)

Kayin State is rich in natural resources, with significant mineral deposits identified by the Department of Geological Survey and Mineral Exploration. Key minerals found in the state include limestone, antimony, coal, gold, gypsum, iron, tin-tungsten, and zinc. Among these, limestone plays a particularly vital role in the state's economic development.

In Hpa-an Township, large-scale limestone deposits are located in the Myaing Ka Lay area, which serve as a key raw material for cement production. Two major cement plants operate in this region: the Myaing Ka Lay Cement Factory (also known as the 4000-ton cement factory) and the 900-ton cement factory. The Myaing Ka Lay Cement Factory, previously run by the Myanmar Economic Corporation (MEC), has been a significant contributor to cement supply both locally and nationally. These factories process limestone extracted from nearby mountains, supporting infrastructure development while also raising environmental and social concerns among local communities due to the scale of mining and associated industrial activities. The presence of these facilities highlights the strategic importance of Kayin State's mineral resources in Myanmar's construction sector and broader economic development.

This study aims to examine community perceptions of mining projects in relation to community engagement, and to explore how mine operators can enhance their social license to operate through effective communication, trust-building, and ensuring community participation in mining governance.

1.2 Objective of the Study

The objective of this study is to examine community perceptions of local mining projects and provide insights to enhance community engagement in the Myaing Ka Lay area of Hpa-an Township.

1.3 Method of Study

The method used in this study is descriptive, based on primary and secondary data. The primary data are collected through structured questionnaire and the secondary data was collected from Myanmar Economic Corporation, government departments, INGOs, NGOs, CSOs, other publications, papers, internet websites and thematic reports on environment issue.

To facilitate efficient and effective community engagement, the questionnaires are classified into five main groups demographics factors, environmental, economic, social, governance and community participation. The classification is designed to facilitate efficient communication between the mining company and the local community in Myaing Ka Lay area of Hpa-an township. The first-class groups demographic factors that may play a role in explaining the diversity of opinions within the host community and the rest four classes deal with issues that community engagement needs to elicit opinions on while.

1.4 Scope and Limitation of the Study

The scope of the study was conducted to the residents near the mining area. Some villages are far and limited access especially during rainy season with inconvenient road conditions, the survey conducted via phones. Some could not conduct survey. The sampling method was used and total 130 villagers from 6 villages (Myaing Kalay, Yae Kyaw, Hlar Kar and Mandalay Kone) near cement factories were conducted interview. This study did not represent other mining industry in Kayin state.

1.5 Organization of the Study

This study is organized into five chapters. Chapter 1, introduces the rationale of the study, objective of the study, method of the study, scope and limitation of the study and organization of the study. Chapter 2 explains the literature review relating to community perception on mining. Chapter 3 presents sustainability, Stakeholder Engagement and the overview of mining sites in Myanmar and Kayin state. Chapter 4 analyzes the survey results. Chapter 5 describes the finding and suggestion of the study.

CHAPTER II
LITERATURE REVIEW

2.1 Overview of the Community Engagement Concept

Although terminology and nuances vary depending on the discipline and context, the idea of community engagement is widely accepted. Despite being a widely used word, "community engagement" may have multiple meanings or signify different things in different disciplines and geographical areas. Similar ideas may be called "patient engagement" or "stakeholder involvement" in the contexts of public health and healthcare (Marzban et al. 2022; Nielsen et al. 2020). Scholars frequently talk about "public involvement in research" or "citizen science" (Silvertown 2009). In addition, social science and the humanities may advocate for "participatory politics" or "deliberative democracy" (Jenkins et al. 2017; Willis et al. 2022).

The terms "community involvement" and "public engagement in environmental decision-making" may be used in environmental efforts (Beierle & Cayford 2002; Wong et al. 2020). Community engagement is a crucial component in mining projects, aiming to involve local populations in decisions that affect their environment, livelihoods, and social well-being. It is essential for gaining a Social License to Operate (SLO) and promoting sustainable, inclusive development (Wang et al., 2016).

2.1.1 Community Engagement and the Mining Industry

Community engagement in mining means working together with local people who live near or are affected by mining activities. It is an important way to make sure that mining helps the community and does not cause long-term harm. Good community engagement involves listening to people’s concerns, sharing information clearly, and including them in decisions about the mining project. It should happen throughout the entire life of the project not just at the beginning. Studies show that people’s opinions about mining depend on many things, such as how much they benefit, the damage they

see in the environment, how they are treated by the company, and whether they feel respected.

The International Council on Mining and Metals (ICMM) defines it as "the process of sharing information and involving individuals and groups in project-related decisions, ensuring their concerns and aspirations are considered throughout the project." Effective engagement goes beyond basic consultation. It requires transparent, two-way communication, inclusive participation, and, in some contexts, Free, Prior, and Informed Consent (FPIC). Such engagement must be sustained throughout the entire lifecycle of a mining project from exploration to closure (Prno & Slocombe, 2012).

Community engagement in mining procedures has emerged as a critical determinant of sustainable resource development, addressing both environmental stewardship and social equity concerns inherent in extractive industries. Significant barriers persist, however, including power asymmetries, information gaps, and institutional weaknesses that frequently marginalize local voices, particularly in resource-rich but governance-poor regions. Recent emerged frameworks propose standardized, community-centric evaluation metrics to transcend traditional compliance-based approaches and meaningfully assess localized well-being. Effective engagement transcends transactional consultations to encompass relational processes such as incorporating Traditional Knowledge, ensuring equitable benefit-sharing, and fostering participatory governance that collectively build trust and social license to operate. The multidimensional engagement mechanisms mitigate conflict risks while aligning corporate practices with community-defined sustainability priorities for long-term operational viability. (Wang at el, 2016)

Community engagement is a fundamental part of responsible mining procedures, aiming to build trust, transparency, and mutual understanding between mining companies and local communities. Effective engagement ensures that the voices of affected stakeholders, especially indigenous and vulnerable groups, are included in every phase of a project from exploration to closure. The document highlights that early and continuous consultation is essential to identify community concerns, expectations, and potential areas of conflict. Community participation helps shape more inclusive decision-making processes and fosters the Social License to Operate (SLO), which is key for long-term project success. The engagement process must go beyond one-way communication and instead promote active dialogue, shared decision-making, and

feedback loops. Challenges often arise due to mistrust, lack of information, or past negative experiences with extractive industries, which must be acknowledged and addressed. Therefore, mining procedures must be guided by clear frameworks that ensure community rights, local development, and environmental protection are upheld throughout the mining lifecycle. (Uthman, 2020)

2.1.2 Sample Cases of Challenges and Burdens

In Brazil, communities near the sites of two of the country's largest mining disasters face acute challenges in engaging with mining companies. Major obstacles include severe power imbalances and information asymmetry. Many local residents lack meaningful opportunities or power to participate in decisions affecting their safety and wellbeing. After mine-related accidents, transparency and fair processes for distributing compensation and reparation are often lacking. The literature highlights that decisions are frequently neither transparent nor participative, which deepens community mistrust and exclusion. (Brumadinho (2019) and Mariana (2015)

A study in Chhattisgarh, India, revealed unusually high rates of respiratory disease and tuberculosis among local populations living near coal mining operations. Despite legal requirements and corporate promises, necessary health facilities and protections fail to materialize for the communities most affected by mining. The burden of disease and environmental degradation falls disproportionately on marginalized, often tribal, communities, who also rarely benefit economically. Engagement is often limited or performative, and the negative impacts on local health, livelihoods, and cultural coherence frequently outweigh any perceived or promised benefits. The story is similar in other resource-rich parts of India, where community consultation is insufficiently implemented, and government regulation is poorly enforced. (*People Living near Mining Activities at Increased Risk of Diseases: Study*, 2020)

Community engagement in South African mining communities faces notable hurdles, particularly regarding relocation. When mines are established, community relationships may be neglected, and communities are sometimes seen as obstacles rather than partners. Essential information about environmental and social impacts is often withheld or not made accessible to local people. After mining begins, engagement can drop off, restricted to corporate social responsibility programs with limited scope. Communities experience loss of land, diminished agricultural livelihoods, and exposure to pollution, while meaningful participation in decision-making processes remains rare.

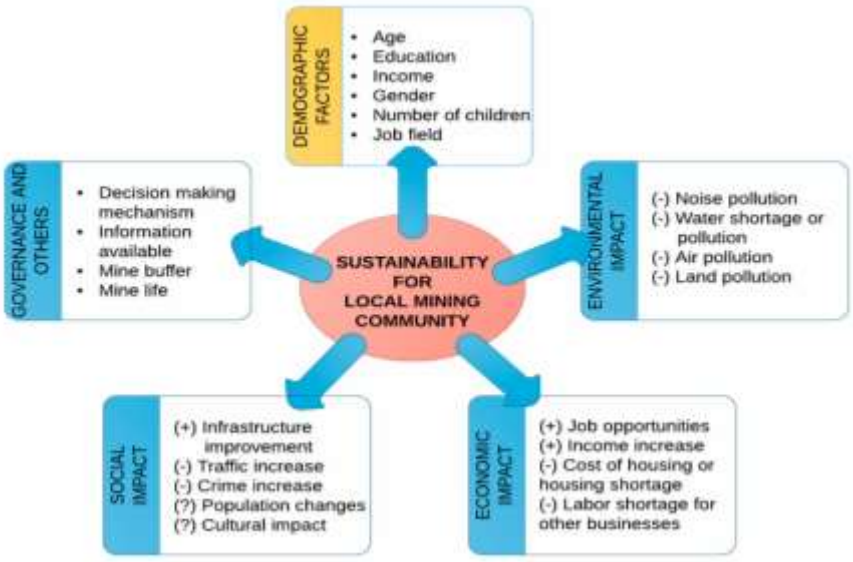
Confusion between multiple government departments and insufficient communication exacerbate relationships, leading to ongoing distrust and resistance. (Pl Seloa & Vm Ngole-Jeme, 2022)

These examples show that challenges such as power imbalances, lack of transparency, health burdens, loss of cultural ties, and structural barriers to information and participation are common across mining communities globally. Addressing them demands stronger, more inclusive engagement frameworks and genuine accountability mechanisms for both governments and mining companies.

2.1.3 Classification of Factors for Effective Community Engagement

Based on literature review of reference papers, a conceptual framework is developed to understand the dynamics of mining impacts and community engagement. The framework integrates key dimensions such as environmental, economic, social, and governance impacts while emphasizing the role of community participation and sustainability principles. Both documents highlight that effective and inclusive engagement is essential for mitigating negative effects and achieving long-term benefits in mining regions. The framework also recognizes regional variations, stakeholder diversity, and the importance of trust, transparency, and local context in shaping outcomes. This introduction sets the foundation for exploring how a structured, participatory approach can support more equitable and sustainable mining practices.

Figure (2.1) Classification of Factors for Effective Community Engagement



Source: Wang at el, (2016)

Effective community engagement requires stakeholders to engage community members on important issues. This requires mine managers to use all community consultation tools, such as surveys, focus group discussions, and town hall meetings. The limits of these techniques mean that many issues may not be properly handled individually. Management needs classification to efficiently gather relevant data (e.g., reducing survey costs or focus group discussions). The engagement program will only work and get social permission if it is efficient (balancing costs, time, and eliciting meaningful information). ICMM. (2012).

Many subjective ways exist to classify community support factors. The authors classified the factors equally into five main groups: environmental, economic, social, governance, and miscellaneous others and demographics. The classification streamlines mining company-community communication. This classification is also subjective and not a general one; but it has proven to be appropriate for the preliminary community engagement research. Four of the classes deal with issues that community engagement needs to elicit opinions on while the last class groups demographic factors that may play a role in explaining the diversity of opinions within the host community. Such classification is important because it can be used to facilitate efficient and effective community engagement. (Wang at el, 2016)

2.2 Impacts of Mining on Communities

Mining delivers essential economic benefits like jobs and revenue, yet simultaneously generates significant socio-ecological trade-offs that undermine community sustainability. This sustainability requires balancing environmental integrity, economic viability, social equity and governance to ensure long-term local well-being. Environmentally, operations degrade resources through water contamination, habitat loss, and substantial greenhouse gas emissions. Economically, mining often creates volatile boom-bust cycles and stifles diversification, endangering resilience.

Socially, health hazards, cultural erosion, and inequitable benefit distribution fracture community cohesion. Critically, participatory governance - transparent engagement, fair conflict resolution, and local agency - forms a fourth indispensable pillar for sustainability. Reconciling mining's dual legacy demands integrated strategies: environmental remediation, inclusive economic planning, and empowering

local voices. Only through such holistic approaches can mining transition from exploitation to regenerative community development. (Wang at el, 2016)

Environmental Impact Assessments (EIAs) are established legal procedures in many countries, including within the European Union, designed to evaluate the potential environmental consequences of mining projects prior to approval. These assessments systematically address impacts such as land degradation, water and air pollution, biodiversity loss, and landscape alteration. The EIA process typically involves baseline studies, impact prediction, mitigation planning, and public consultation to minimize environmental harm. However, despite comprehensive legal frameworks, the effectiveness of EIAs can vary due to inconsistent implementation and enforcement across jurisdictions. (European Parliament, 2022)

Table (2.1) Potential Environmental Impacts of Mining

Land	Water	Other
Changes to land, topography and landscape	Changes in hydrology	Light pollution
Erosion	Ground and surface water impacts	Air quality, dust and smell
Waste rock and tailings	Changes in water quality (e.g. clouding)	Noise pollution
Alteration of soil profiles and risks of contamination	Controlled wastewater discharges and their cumulative impacts	Vibration
Habitat changes, fragmentation and loss	Increasing water scarcity in arid areas	Climate impacts
Loss of vegetation and deforestation	Risks of contamination, acid mine drainage, dam accidents, dewatering	Radiation
	Cumulative environmental impacts	
	Changes and loss of biodiversity	

Source: (European Parliament, 2022)

Complementing EIAs, Social Impact Assessments (SIAs) evaluate the socio-economic and cultural effects of mining on local communities, including impacts on livelihoods, health, social cohesion, displacement, and governance. The European study highlights that SIAs are not yet uniformly mandatory or integrated into mining permitting processes, leading to gaps in addressing important social factors. The lack of adequate social assessments and meaningful community participation often results in conflicts and opposition to mining projects, particularly where affected people feel excluded from decision-making. Legal frameworks such as the Aarhus Convention emphasize public participation rights, and the integration of SIAs with EIAs and Human Rights Impact Assessments (HRIAs) is increasingly recognized as best practice, especially regarding indigenous populations. (European Parliament, 2022)

2.2.1 Environmental Impacts

The environmental impacts of mining are extensive and multifaceted, affecting landscapes, ecosystems, biodiversity, soil, water, and air quality. Mining activities cause direct physical destruction through land excavation - particularly in surface mining, which involves removing large areas of vegetation and topsoil, leading to habitat loss and changes in landform such as sinkholes and erosion. Mining significantly alters natural ecosystems, causing loss of indigenous vegetation and wildlife habitats, as well as soil degradation and contamination.

Water resources are heavily impacted by mining. Extraction processes often lower groundwater tables and pollute surface and groundwater with heavy metals, acids, and chemicals like cyanide and sulfuric acid used in ore processing. This pollution can lead to acid mine drainage, which persists long after mining operations cease, contaminating waterways and harming aquatic life and communities that depend on these waters. Mining waste, including tailings and rock debris, occupies large land areas and contains toxic substances that, when exposed to air and water, release bioavailable heavy metals that accumulate in the food chain. Air pollution arises from dust and emissions during mining and processing, contributing to greenhouse gas emissions, which constitute 4-7% of global emissions, exacerbating climate change.

Mining often leads to broader ecosystem disturbances beyond the immediate site, such as changes in river flow and siltation, which affect regional biodiversity and ecosystem services. The destruction and contamination of habitats can drive endemic species toward extinction due to their specialized ecological needs.

Socially, mining can disrupt Indigenous and local communities, particularly when extraction occurs on ancestral lands without proper consultation, compounding environmental degradation with social injustice. While it provides economic benefits, sustainable mining requires stringent impact assessments, regulation, restoration efforts, and respect for local communities to mitigate these environmental costs. (Hamidu Ami, 2022)

Mining activities have had significant negative environmental impacts according to community perceptions. The water quality had deteriorated, citing changes in taste, odor, and associating pollution directly with mining operations. Soil erosion and soil pollution were also perceived to have increased, indicating noticeable degradation, mainly attributed to mining processes and related waste management practices. The loss of vegetation cover and reduced crop yields were observed with many attributing these changes to contamination and land disturbances from mining. Similarly, air pollution was unanimously regarded as having increased due to dust and emissions associated with mining vehicles and tailings facilities. Furthermore, wildlife populations have declined, and available land for farming and grazing has shrunk, as mining activities occupy large tracts and degrade remaining land. Overall, the community perceives mining as the leading cause behind the deterioration of their local environment, affecting water, soil, vegetation, air quality, and biodiversity. (Pl Seloa & Vm Ngole-Jeme, 2022)

The Kampot Cement Plant in Cambodia has a substantial environmental impact, with the calcination stage accounting for over 98% of emissions linked to climate change, human toxicity, particulate matter, and ozone formation. The plant relies almost entirely on coal (99%), resulting in high CO2, NOx, SO2, and particulate emissions. Replacing coal with a coal–biomass mix can cut CO2 emissions by up to 51% and reduce NOx and SO2, though it raises PM2.5 and certain heavy metal emissions like cadmium and chromium. Other production stages have comparatively minor impacts. While alternative fuels offer emission reduction potential, biomass use can increase human toxicity risks. Enhanced emission control technologies and continuous monitoring are needed to limit the plant's significant contribution to air pollution and climate change in Cambodia. (Chanto Chea et al, 2022)

2.2.2 Economic Impacts

Mining can bring both good and bad effects to local communities. On the positive side, mining creates jobs and helps people earn income, especially in remote areas. It also supports small businesses by increasing demand for goods and services. Mining companies often build roads, schools, and hospitals that can benefit the whole region. Local farmers and shop owners can also sell their products to workers, which helps grow the local economy. (How Mining Positively and Negatively Impacts Local Communities, 2025)

Many communities depend too much on the mine, and when it closes, jobs and services may disappear. This can make the community economically unstable. Sometimes, only a few people get the benefits while others face problems like pollution or land loss. This can lead to arguments and unfairness. Also, mining can damage the environment, which affects farming, fishing, and clean water sources that people rely on. Even though mining brings money, it can hurt people's traditional ways of making a living. For communities to benefit in the long term, there needs to be good planning, fair sharing of profits, environmental care, and strong community involvement. (*SPOTLIGHT: Rethinking the Impact of Mine Closure on Communities*, 2024)

Community engagement in the mining sector is a crucial component of regional economic development, as it helps foster trust and transparency with local stakeholders. By actively involving the community and openly addressing their concerns, companies can align their operations more closely with local expectations and needs. Such initiatives, like the Community Scorecard used by Eagle Mine in Michigan, can lead to actionable changes that benefit both the company and the public. This approach can also improve the public image of the industry, which is vital for attracting a skilled workforce and promoting long-term economic growth. Ultimately, proactive engagement and educational campaigns that highlight the economic, social, and environmental benefits of mining help promote regional development and build constructive relationships. (Mining For Talent © OECD, 2025)

Mining activities significantly stimulate the local economy, primarily by creating jobs and increasing incomes. However, there is a notable dependency on mining, with limited economic diversification posing a risk to community resilience. Mining also drives the development of infrastructure, although the type of contributions tends to shift over time—from investments in physical infrastructure to a greater focus on social infrastructure. Despite these benefits, negative economic pressures such as

housing shortages, rising living costs, and labor market disruptions in other sectors affect local communities. These dynamics play a crucial role in shaping community perceptions and acceptance of mining projects. Both studies highlight the importance of ongoing community engagement as a key strategy to effectively understand and address these economic impacts. (Uthman, 2020)

2.2.3 Social Impacts

Mining can have both good and bad effects on the social life of communities. On the positive side, it can bring jobs, support the local economy, and lead to better roads, schools, and health services. However, the negative effects are often serious and long-lasting.

Mining often forces people to leave their homes and traditional lands, especially Indigenous communities. This can break apart families and social ties, while also destroying the lands and water that people depend on for farming, fishing, or collecting forest products. When people are not treated equally or left out of important decisions, it can cause conflict and mistrust between groups. (Kanungo, 2023)

Cultural problems are also common, as mines may be built near or on land that is sacred or culturally important. This can damage a community's identity and values. Because of this, it is very important that companies talk with communities in a fair and open way. This includes asking for permission before starting, sharing benefits fairly, and having a way for people to complain if something goes wrong. So, to make sure people are treated fairly, mining companies need to work closely with communities and make sure their voices are heard and respected. (How Mining Positively and Negatively Impacts Local Communities, 2025)

The social impacts of mining in the communities around the Bokoni platinum mine are predominantly perceived negatively. Most community members (91.2%) reported frequent illnesses such as common cold, cough, chest pains, skin, and breathing problems, attributing these health issues mainly to dust from mining activities. The standard of living is perceived to have deteriorated due to poor soil fertility, lack of potable water, inadequate healthcare facilities, poor road infrastructure, absence of skills development programs, and high unemployment. Participants highlighted damage to housing caused by vibrations from blasting and heavy vehicle movements. Cultural erosion was noted by 96% of respondents, mentioning that the influx of non-indigenous workers has affected local language, lifestyle, and behavior

patterns causing competition for jobs and resources. Despite expectations, the mine has not effectively contributed to improving employment rates or infrastructure, leading to mistrust between the community and the mining company. These negative perceptions challenge the success of Corporate Social Responsibility initiatives aimed at bettering the lives of surrounding communities. (Pl Seloa & Vm Ngole-Jeme, 2022)

The sense of community identity may weaken, as local businesses and traditions are replaced by mining-driven economic structures. Over time, the psychological well-being of residents may decline due to stress, environmental concerns, and the instability of boom-bust economic cycles. Social inequality may also intensify, as benefits from mining are unevenly distributed. Collectively, these social impacts underscore the need for careful planning and inclusive engagement to protect community cohesion and well-being in mining regions. (Wang et al, 2016)

2.2.4 Governance and Others

Mining operations significantly influence governance structures within host communities, particularly in how decisions are made and how transparent those processes are. Since mineral rights are often held by governments, mining companies must obtain permits through formal regulatory channels, making governance a central actor in the mining approval process. Communities expect that the government will act as a fair and impartial intermediary, ensuring that mining activities align with public interests. However, when decision-making appears biased or lacks transparency, community trust in both government and mining companies declines. The perception that public officials are influenced by corporate interests can undermine the legitimacy of the entire permitting process. (Hofmeyr, 2025)

Access to independent and transparent information is essential; communities are more likely to trust impact assessments when they are reviewed by neutral experts without industry ties. In many cases, government-provided or company-prepared reports are viewed with skepticism, limiting meaningful participation. A robust governance framework should therefore guarantee inclusive engagement, where community members are involved in shaping policies and voicing concerns. The effectiveness of governance also depends on how well grievances and conflicts are managed and resolved during the mining lifecycle. Overall, weak or opaque governance mechanisms can escalate tensions and contribute to a loss of the social license to

operate, making good governance a critical component of sustainable mining practices. (Wang et al, 2016)

Governance frameworks increasingly emphasize the importance of Free, Prior and Informed Consent (FPIC) for Indigenous and local communities, ensuring their participation in decisions affecting their lands and livelihoods. Equitable benefit-sharing and grievance mechanisms are essential to address social conflicts. (Kipsang, n.d.)

2.3 Review on Previous Studies

Understanding the sustainability of local mining communities requires a multidimensional review of past research. This section highlights previous studies relevant to sustainability, environmental and social impacts of mining, community perceptions, and the Myanmar mining context especially those that inform this study's investigation into the limestone-based cement industry in Kayin State.

Hilson and Murck (2000) emphasized that sustainable mining development must balance environmental protection, economic growth, and social equity. Their study laid the foundation for evaluating how mining projects can deliver long-term benefits while minimizing harm. Similarly, Azapagic (2004) developed a sustainability indicator framework for the mining and minerals industry, helping practitioners measure environmental footprints, economic output, and community impact.

Petkova et al. (2009) explored community perceptions around mining projects in Australia and found that local dissatisfaction was driven more by lack of transparency and exclusion from decision-making than by the physical impact of mining itself. This highlights the importance of community engagement and clear communication for project legitimacy and long-term sustainability.

Kyi Htun (2014) studied that mining in Myanmar brings both opportunities and serious challenges, while the mining sector has expanded, it often lacks proper environmental and social protections. Large-scale, open-cut mining has caused problems like deforestation, soil damage, and polluted water. Many people have been forced to leave their homes or have lost their traditional ways of living, such as farming and fishing. Another study by Aye Thiri Khin focused on environmental impact assessments (EIA) and found that although EIA is legally required, it is often not done properly. Communities are usually not involved in decision-making, and there is weak monitoring by the government. Both studies agree that to make mining sustainable,

local people must be included in every step of the project and stronger laws and enforcement are needed.

Weng (2015) examined the Letpadaung Copper Mine and found deep mistrust between local communities, government, and the mining operator in Myanmar. The study revealed that the lack of proper grievance mechanisms and forced land acquisition fueled local resistance. Such findings are directly relevant to the Myaing Kalay case, where communities express concern over environmental degradation and lack of accountability.

Olasumbo et al. (2016) conducted a comparative cross-sectional study to evaluate the environmental and health impacts of cement production in Ibese, Nigeria. The study employed environmental sampling of air and water pollutants. Results revealed significantly elevated levels of air and water pollutants near the cement plant compared to control sites. Residents in the exposed areas reported higher incidences of respiratory symptoms (e.g., cough, wheezing, chest tightness), dermatological issues, and eye irritation. Clinical findings also showed reduced lung function among those living closer to the plant. The study provides strong evidence of the adverse environmental and health effects associated with cement plant emissions.

Wang et al. (2016) highlight that community engagement in mining is not just a transactional activity but a strategic element vital for sustainability. They identify procedural fairness the perceived fairness of engagement processes as the key factor driving community acceptance. Transparency, access to information, and meaningful opportunities for input are valued more than financial compensation. The study also critiques traditional top-down approaches, noting that a focus on regulatory compliance without genuine dialogue fosters mistrust. Instead, effective engagement should begin early, be ongoing, culturally sensitive, and involve communities in shaping project outcomes. Trust, they argue, stems from fairness and influence not just material benefits.

The 2016 EIA for Max Myanmar's Taung Philar Limestone Mine identifies major environmental and social risks, including deforestation, water pollution, and community disruption. While significant impacts from quarrying and blasting are expected, the project incorporates mitigation measures such as dust control, waste management, and public consultation, along with proactive engagement through CSR initiatives, grievance mechanisms, and a village monitoring committee. The report concludes that the project's benefits supporting infrastructure development, creating

jobs, and boosting the local economy outweigh the disadvantages, provided the Environmental Management Plan is effectively implemented. However, it also highlights weak enforcement, limited technical capacity, and the need for stronger community engagement and transparency. (Myanmar, 2016)

The Myanmar Centre for Responsible Business conducted a sector-wide impact assessment of the country's mining sector, identifying weak legal enforcement and low levels of community participation in environmental decision-making. Companies were found to have a poor understanding of the importance of community engagement. When any form of consultation did happen, it was typically on an ad hoc basis, favoring village leaders and elites rather than involving a diverse representation of community members. This absence of effective public participation and disclosure can result in mines operating without a solid "social license to operate". While the 2018 Rules require companies to discuss "social responsibility" with local communities, there are no specific legal provisions for benefit-sharing or agreements between communities and companies. (Anon, 2022). Another study by (Lin, 2025) in Tanintharyi Region focused on coal mining, reporting rising health problems due to air and water pollution and the degradation of farmland.

Activities of gold mining can provide socio-economic opportunities for local people. The industry of gold mining plays an important role in the economy of Myanmar, particularly in regions like Mandalay and Sagaing. A study on gold mining in the Wetthe-Phatshe area used SWOT analysis to explore strengths and weaknesses for sustainable development. The study aimed to analyze the environmental impacts of gold mining in the area. Data was collected through field surveys to assess these impacts. (Khin Thein Oo and and Hla Kyi, 2019) Yadanabon University Research Journal 2019, Vol-10, No.1

Global Witness (2019) and Environmental Justice Atlas (2020) documented significant cases in Myanmar where mining operations led to land loss, environmental pollution, and social disruption especially in ethnic minority areas. Rare earth mining in Myanmar has resulted in severe environmental and social consequences. The use of chemicals like ammonium sulfate in the extraction process has led to widespread poisoning of ecosystems, contaminating streams with elevated levels of arsenic and making them unable to sustain fish or other wildlife. Communities suffer from health problems, including respiratory and skin issues, due to chemical exposure, and there have been reported deaths of miners. The boom in mining has also fueled social issues,

such as increased drug use and violence, and has resulted in land grabs without proper compensation. Ultimately, the unregulated nature of this industry has destroyed livelihoods and caused extensive damage to a region known for its rich biodiversity. (Annual Report 2022: Rising to the Challenge of a World in Crisis, 2022)

Mishra et al. (2022) conducted a systematic literature review, following PRISMA guidelines, to evaluate the environmental impacts of the cement industry. The review found that cement production significantly contributes to air pollution (including CO_2, PM, NO_x, SO_2, heavy metals), water contamination, soil degradation, and resource depletion. Quarrying leads to deforestation and biodiversity loss, while high energy and water use intensify environmental stress. Despite available mitigation technologies, their limited effectiveness and the scale of production make the industry a major global environmental concern.

Public engagement in EIAs is essential for sustainable development. Community involvement allows for transparent decision-making by voicing concerns. Additionally, it builds public trust in project developers. Environmental awareness and EIA inclusion are needed by the public. In Pyay District, Bago Region, public participation studies found strong environmental awareness but weak communication effectiveness. (Aye Thiri Khin, 2024 - Bing, 2024)

CHAPTER III
OVERVIEW OF MINING SECTOR IN MYANMAR

3.1 Mining Sectors in Myanmar

Myanmar has a diverse and resource-rich mining sector that includes the extraction of metals (such as gold, copper, lead, zinc, tin, and tungsten), industrial minerals (like limestone and barite), and precious stones (such as jade and rubies). Mining occurs in almost every state and region. Key minerals like jade and gems are primarily extracted in Kachin and Shan States, while limestone and coal are widely found in Kayin, Sagaing, and Mandalay regions.

The Ministry of Mines in Myanmar is responsible for the administration of the country's mineral resources, overseeing extraction, production, and export policies. The mining sector in Myanmar is broadly categorized into three main types: small-scale mining, which is mostly locally owned; medium-scale mining, which often includes joint ventures; and large-scale mining, which typically involves foreign direct investment.

Myanmar's diverse geology results in distinct mineral-rich regions. The Northern Highlands, encompassing Kachin and parts of Shan State, are globally renowned for jade, gold, and amber; this region faces significant challenges related to conflict and illegal mining. The Central Belt, spanning Sagaing and Mandalay Regions, is a major hub for copper production, gold and antimony. The Southern Coastal Zone, primarily Tanintharyi Region, is a significant global tin producer, also yielding tungsten and nickel, with substantial Thai investment (International Tin Association [ITA], 2023). The Western Zone, covering Chin and Rakhine States, features chromite, limestone, and emerging rare earth element sites, often linked to Chinese market demand. According to Global Witness's 2024 report, Myanmar's rare earth mineral production increased by approximately 40% between 2021 and 2023. Other notable sites include the legendary gem fields of Mogok in Mandalay Region, famous for rubies, sapphires, and spinel, and the historic tungsten-tin hub of Mawchi in Kayin State. (Hughes, 2012) (Y3A, 2025)

The mining sector in Myanmar is one of the country's key extractive industries, contributing significantly to national income, export revenue, and employment. Myanmar is rich in a wide range of mineral resources, including jade, gemstones (especially rubies and sapphires), gold, copper, tin, tungsten, zinc, limestone, and industrial minerals.

Table (3.1) Production of Minerals by Year, Absolute Values

Mineral	Unit	2010-2011	2015-2016	2019-2020	2020-2021	2021-2022 (Oct-Mar)	2022-2023
PRECIOUS MINERAL							
Jade	(00) Kilogram	44,404	35,977	29,412	8,394	4,220	1,182
Gems	(000)Carat	9,208	13,482	52	-	-	-
Refined Gold	Troy oz	5,516	54,400	23,009	27,189	8,989	17,464
METAL AND ORE							
Lead Associated Ore	Ton	28,322	17,463	22,710	25,355	17,472	28,784
Lead Concentrate	Ton	1,105	7,319	25,116	7,185	2,435	12,058
Manganese Dioxide	Ton	68,645	4,722	-	200	1,100	2,648
Copper Associated Ore	Ton	9,870	6,015	5,335	250	300	550
Iron Ore	Ton	-	1,286	11,400	-	15,900	27,600
Antimony Ore	Ton	-	5,777	345	2,155	4,908	9,174
Antimony Concentrate	Ton	-	760	-	-	-	-
Bauxite	Ton	-	7,968	63,500	7,519	82,877	238,500
Ferro Nickel	Ton	-	65,466	76,347	52,970	15,703	36,731
Chromium Ore	Ton	-	1,200	1,700	900	50	210
Zinc Concentrates	Ton	-	758	919	900	450	2,654
Zinc Associated Ore	Ton	3,627	31,025	6,755	9,800	5,780	14,334
Tin Concentrates	M.Ton	653	451	285	134	103	173
Tungsten Concentrates	M.Ton	1	10	50	49	-	24
Mixed Tin, Tungsten and Scheelite	M.Ton	1,204	627	275	141	101	245
a.Tin/Tungsten mixed	M.Ton	468	385	101	11	85	151
b.Tin/Tungsten/Scheelite	M.Ton	736	242	174	130	16	94
MINERAL FUEL							
Coal	Ton	239,527	419,862	2,054,322	1,367,751	769,906	2,199,443
INDUSTRIAL RAW MINERALS							
Baryte	Ton	14,346	2,836	7,227	1,690	2,328	28,397
Baryte Powder	Ton	22,645	2,000	-	-	-	-
Clay	Ton	-	1,650	-	-	148,842	217,564
Fire Clay	Ton	-	2,950	40	50	-	-
White Clay	Ton	4,197	5,250	1,285	800	-	-
Quartizite	Ton	2,000	2,715	110	-	-	-
Granite	Ton	-	200	242	160	90	110
Marble	Ton	438	3,346	9,351	2,305	1,914	5,487
Limestone	Ton	939	3,427,909	10,473,255	6,604,707	4,049,206	8,385,640
Bentonite	Ton	546	700	-	-	-	-
Gypsum	Ton	77,617	99,859	299,630	64,626	43,333	178,418
Dolomite	Ton	2,350	2,200	-	-	-	-

* Less than one unit.
Source: Planning Department

The table (3.1) describe the production of minerals by year from 2010 to 2024 in Myanmar. Mineral production particularly of limestone, coal, gypsum, and clay has increased significantly from 2010-2011 to 2023-2024, reflecting rising industrial demand and expanded mining activities. While coal and limestone saw the sharpest growth, gypsum and clay also trended upward. Production trends highlight Myanmar's focus on expanding construction materials and energy minerals, with mining diversification in metals growing moderately. This surge highlights the push toward resource-based economic development but also raises concerns about environmental and social impacts, underscoring the need for stronger regulations and sustainable practices.

The production of three mineral (coal, limestone and gypsum) which are the main the major important minerals in Kayin State highlighted the significant increasing of amount especially for limestone (939 ton in 2010-2011 to 11205376 ton in 2023-2024). According to the table(3.1), the limestone production is extraordinary growth between 2010-2011 and 2015-2016 (nearly 365,000% increase). It continued significant rise (over 200%) by 2019-2020. But it declines in 2020-2021 and 2021-2022 possibly due to political instability, COVID-19, or other factors. However, there was strong recovery in 2022–2023 with over 100% growth compared to the previous partial year (Oct-Mar).

3.1.1 Economic Significance of the Mining Sector

Myanmar's mineral wealth has been exploited for centuries, with gemstone trade along ancient Silk Road routes documented as early as the 6th century. Modern mining practices were significantly developed during British colonial rule in the 19th century. Following independence in 1948, the sector remained largely under state control until economic liberalization policies in the 1990s began attracting foreign investment (World Bank, 2016).

The mining sector in Myanmar holds notable economic significance, though its contribution to the national economy remains relatively modest, accounting for only about 0.5% to 1.0% of GDP in recent years. While industry as a whole including mining, manufacturing, and construction forms a larger share of the economy, mining itself is a minor component within this, largely due to limited formal large-scale operations and the prevalence of artisanal and small-scale mining (ASM). Despite its small GDP share, the sector is an important source of government revenue and foreign

exchange, driven by exports of precious stones such as jade and rubies, metals like tin and gold, and industrial minerals including limestone, coal, and gypsum.

Myanmar ranks among the world's top tin producers, and production of limestone and coal has surged to meet the growing demands of the construction and energy sectors. Employment in mining is substantial, particularly in ASM, which engages hundreds of thousands of workers, especially in the jade industry, while formal mining employment is smaller but regionally important. The sector attracts both domestic and foreign investment; however, it faces persistent challenges from governance weaknesses, political instability, and security concerns, which hinder operational stability, expansion, and formalization. Although economic benefits from mining are often concentrated in mineral-rich regions boosting local economies they are unevenly distributed, with environmental degradation, social tensions, and informal mining practices reducing the broader benefits to the nation. (*Myanmar, GDP Contribution of Mining Sector*,)

According to the Myanmar's official statistical yearbooks and economic databases, the mining sector's contribution to GDP from 2015 to 2024 reflects volatile trends influenced by regulatory reforms, environmental challenges, and political instability. The mining sector reached its highest output in 2015, driven by foreign investments in copper and gemstone projects under the reformed Mines Law. By 2017, output declined due to environmental restrictions and reduced gemstone licensing.

Table (3.2) Shares of Gross Domestic Product at Current Prices by Sector of Activity

Sectors	2010-2011	2015-2016	2019-2020 (P.A)	2020-2021 (End of Sep)	2021-2022 (Oct-Mar)	2022-2023 (Apr-Mar)	2023-2024 (End of Mar)
AGRICULTURE	**36.8**	**26.8**	**20.9**	**22.7**	**24.2**	**22.3**	**22.7**
Agriculture	27.9	18.5	13.1	14.0	16.8	13.8	14.5
Livestock and Fishery	8.5	8.1	7.7	8.6	7.3	8.4	8.1
Forestry	0.4	0.2	0.1	0.1	0.1	0.1	0.1
INDUSTRY	**26.5**	**34.5**	**38.6**	**37.1**	**37.4**	**38.3**	**37.6**
Energy	0.2	5.1	3.8	3.0	3.1	4.7	3.7
Mining	0.7	1.1	1.0	0.8	0.5	0.7	0.7
Processing and Manufacturing	19.9	20.8	25.5	25.6	27.4	25.6	25.9
Electric Power	1.1	1.4	1.7	1.6	1.1	1.3	1.2
Construction	4.6	6.1	6.6	6.1	5.3	6.0	6.1
SERVICES	**36.7**	**38.7**	**40.5**	**40.2**	**38.4**	**39.4**	**39.7**
Transportation	11.5	11.3	10.7	9.9	8.9	10.0	10.3
Communications	0.8	2.1	2.0	2.2	1.6	2.0	2.0
Financial Institutions	0.1	0.2	0.4	0.4	0.3	0.4	0.3
Social and Administrative Services	2.3	3.7	3.2	3.3	2.4	3.0	3.0
Rental and Other Services	1.9	2.5	3.2	3.1	2.6	3.2	3.2
Trade	20.1	18.9	21.0	21.3	22.6	20.8	20.9
GROSS DOMESTIC PRODUCT	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Planning Department 2024

The table (3.2) represents shares of Gross Domestic Product (GDP) at current price in absolute values in percents by sectors of activity from the year 2010-2011 to

2023-2024. The mining sector in Myanmar has shown variable annual contributions to GDP with periods of significant contraction, especially during and following the 2020 pandemic. However, signs of recovery in 2023-2024 indicate renewed potential for mining to support economic growth. This volatility highlights the need for sustainable mining practices and stable policies to better harness the sector's resource potential while mitigating economic disruptions.

The mining sector contribution to GDP has remained relatively small but stable over the last decade-plus. Mining's GDP contribution is relatively small compared to broader industrial and service sectors. Industry overall constitutes about 37.6% of GDP, with mining only a small portion (0.7%). Its role is overshadowed by larger sectors such as agriculture, manufacturing, trade, and construction.

Table (3.3) Foreign Investment of Permitted Projects as of (31/7/2025)

(US $ in million)

Sr. No.	Particulars	Permitted Projects		
		No.	Approved Amount	%
1	Power	51	26560.133	28.32
2	Oil and Gas	155	23151.432	24.68
3	Manufacturing	1611	13664.376	14.57
4	Transport & Communication	64	11394.809	12.15
5	Real Estate	67	6603.497	7.04
6	Hotel and Tourism	91	3284.837	3.5
7	Mining	71	2913.285	3.11
8	Livestock & Fisheries	80	974.03	1.04
9	Industrial Estate	10	621.782	0.66
10	Agriculture	46	448.621	0.48
11	Construction Services	3	102.767	0.11
	Total	**170**	**4069.073**	**4.34**

Source: DICA, 2025

The table (3.3) described foreign investment of permitted projects as of 31 July 2025. Foreign Direct Investment (FDI) in Myanmar's mining sector stood at US$2913

million in permitted projects (71 approvals) and ≈3.1% of sectoral FDI totals permitted. The discrepancy between the large number of permitted projects and the relatively few operating projects signals a substantial project pipeline and the long lead-times typical of mining. Although mining attracts significant capital per operating project indicative of high capital intensity its share of national FDI remains modest relative to power, oil & gas, and manufacturing, underscoring both the sector's regional importance and the need for improved governance, community engagement, and formalization strategies to convert approvals into sustainable operations.

Table (3.4) Yearly Approved amount of Foreign Investment (By Sector)

(US $ in million)

Sr No	Sector	Foreign Capital to be paid-up	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026 (As of 31/7/2025)	
1	Agriculture	448.621	17.730	9.988		3.500	2.758	0.525		
2	Livestock &	974.030	138.488	19.698	19.350	2.168	23.469	2.657		2.500 *
3	Mining	2913.285	3.800			7.000				
4	Manufacturing	13664.376	1126.066	286.023	202.667	271.806	151.393	182.683	24	82.702 *
5	Power	26560.133	1026.890	3121.323	20.584	820.270	374.525	8.501		9.908 *
6	Oil and Gas	23151.432	352.820					357.040	1	21.000
7	Construction	102.767			65.000					
8	Transport	11394.809	300.454	133.500	45.600		77.82	87.715		
9	Hotel and Tourism	3284.837	53.342	81.000	30.497	2.800				
10	Real Estate	6603.497	1115.957	8.000	38.807	29.000	10.533			
11	Industrial Estate	621.782	273.490	28.210						
12	Services	4069.073	469.780	103.656	219.579	504.123	21.123	51.068	1	2.589
	Total	**93788.642**	**4878.817**	**3791.398**	**642.084**	**1640.667**	**661.621**	**690.189**	**26**	**118.699**

* Include Increase Investment

Source: DICA, 2025

According to the table (3.4), between 2019 and mid-2025, foreign direct investment (FDI) in Myanmar's mining sector demonstrated an inconsistent and low-volume trend compared to other sectors. With total committed foreign capital of US$ 2.91 billion about 3.1% of the national total the sector ranks as a mid-tier FDI recipient, trailing far behind power, oil and gas, and manufacturing. Annual approved inflows were minimal, peaking at just US$ 7 million in 2022-2023, with no approvals recorded

in several years, including the first seven months of 2025-2026. This stagnation suggests that the sector's recent growth is driven by earlier approvals rather than fresh commitments. Contributing factors likely include political instability, governance challenges, and market uncertainty. Without regulatory improvements, environmental safeguards, and investment incentives, the mining sector risks continuing underperformance despite Myanmar's significant mineral potential.

Table (3.5) Mining by State and Region

States and Regions	Type	2017*	2018*	2019*	2020*	2021*	2022*	2023*	2024*
UNION	**Metal**	**648**	**650**	**708**	**660**	**731**	**577**	**501**	**291**
	Non-metal	**289**	**299**	**345**	**361**	**444**	**439**	**409**	**204**
Kachin State	Metal	68	68	73	69	82	68	65	16
	Non-metal	2	2	13	15	24	23	17	2
Kayah State	Metal	16	15	17	17	17	16	15	6
	Non-metal	-	-	-	-	-	-	-	-
Kayin State	Metal	23	23	25	24	21	21	15	1
	Non-metal	17	17	18	18	21	20	19	9
Sagaing Region	Metal	134	141	144	132	135	59	51	32
	Non-metal	32	32	52	52	79	78	70	44
Taninthayi Region	Metal	36	35	50	47	68	66	37	27
	Non-metal	17	17	15	26	18	18	18	9
Bago Region	Metal	2	2	3	3	4	2	2	1
	Non-metal	-	3	3	3	3	3	3	-
Magway Region	Metal	-	-	2	2	-	-	-	-
	Non-metal	43	38	43	40	51	51	49	22
Mandalay Region	Metal	196	200	205	189	199	164	159	132
	Non-metal	92	92	86	94	120	121	116	55
Mon State	Metal	9	9	8	5	6	5	5	2
	Non-metal	10	10	10	10	11	11	8	2
Shan State	Metal	164	157	181	172	196	173	149	74
	Non-metal	70	81	98	96	109	106	102	55
Chin State	Metal	-	-	-	-	3	3	3	-
	Non-metal	-	-	-	-	1	1	-	-
Ayeyawady Region	Metal	-	-	-	-	-	-	-	-
	Non-metal	2	3	3	3	3	3	3	2
Rakhine State	Metal	-	-	-	-	-	-	-	-
	Non-metal	1	1	1	1	1	1	1	1
Nay Pyi Taw	Metal	-	-	-	-	-	-	-	-
	Non-metal	3	3	3	3	3	3	3	3

Source: Planning Department, 2024

The table (3.5) presents data on metal and non-metal mining by state and region in Myanmar from 2017 to 2024. Across most regions, mine counts declined notably after 2021, likely due to factors such as economic downturns, policy shifts, and operational challenges. Kayin State's mining sector is relatively small compared to major mining hubs, with particularly low numbers of non-metal mines, suggesting limited exploration, investment, or development. In 2024, both metal and non-metal mines in Kayin State declined sharply, a steeper drop than the national trend especially for metal mining (23 in 2017 to 1 in 2024). While nationwide regulatory changes, including stricter licensing, enhanced environmental controls, and possible decentralization, have influenced mining operations, Kayin State's situation is further compounded by ongoing conflict and instability, which restrict site access, disrupt operations, and deter investment. Together, governance reforms and security challenges have likely driven the significant recent decline in mining activity in the state.

3.2 Regulatory Framework, Policies, and Laws Governing Myanmar's Mining Sector

The Ministry of Natural Resources and Environmental Conservation (MNREC) is the responsible ministry for the administration and regulation of the mining industry. The Department of Mines (DOM), which sits within the MNREC, is in charge of the administration of mineral policy, mine inspection, environmental conservation and royalty collection. Myanmar's mining sector is governed by a series of laws, regulations, and policies issued by successive governments over time. These legal instruments aim to regulate mineral exploration, extraction, investment, environmental protection, and benefit-sharing from the country's rich mineral resources. The framework has evolved in response to both domestic needs and international standards, reflecting shifts in political governance, economic priorities, and environmental awareness.

Myanmar's mining sector is governed primarily by the Myanmar Mines Law (1994), which established foundational objectives including mineral resource development, investment promotion, and environmental protection during mining, and state oversight of exploration/production permits. A transformative amendment was enacted on 24 December 2015 (Law No. 72/2015), replacing the mandatory 30% government production-sharing model with flexible state participation options (equity interest, profit-sharing, or royalties) and capping royalty rates at 2–5% depending on

mineral type. This amendment extended large-scale production permits from 15 years to a maximum of 50 years and permitted foreign investors to form joint ventures for small/medium-scale mining - previously restricted to domestic entities. Implementing these reforms, the Myanmar Mines Rules (2018) detailed permit procedures, setting area limits for prospecting (≤4,200 km²) and exploration (≤3,150 km²), mandating Environmental Impact Assessments (EIAs) for operations exceeding 200 acres, and granting automatic progression from exploration to production permits without reapplications.

The Myanmar Mines Rules (2018) require Environmental and Social Impact Assessments (ESIAs) and Community Development Agreements (CDAs) for large-scale mining licenses. CDAs oblige companies to allocate funds (often 2–3% of annual revenue) to local infrastructure, education, or healthcare (DICA, 2019). The EIA Process (2016) further mandates public consultations, though these are frequently criticized as tokenistic, especially in ethnic states where language barriers and security concerns limit meaningful participation (Woods, 2019). Governance is fragmented: the Ministry of Natural Resources and Environmental Conservation (MONREC) oversees licensing, while state/regional authorities manage local impacts, creating coordination gaps that undermine accountability (NRGI, 2020).

Myanmar's Mines Rules (2018) mandate rigorous environmental protocols to balance resource extraction with ecological protection. Operators must establish three dedicated funds: an Environmental Conservation Fund for mitigation, a contribution to the national Environmental Management Fund, and a Mine Closure Fund for site rehabilitation. Projects exceeding 200 acres or processing >50,000 tons/acre require Environmental Impact Assessments (EIAs), while smaller operations need Initial Environmental Examinations (IEEs). Community engagement is compulsory, requiring negotiated Social Responsibility Plans with local stakeholders. Operations must safeguard water resources, prohibit chemical contamination (e.g., banning acid leaching due to heavy metal risks), and enforce worker safety protocols for hazardous materials. Pollution controls for air, water, and waste emissions are mandatory, though sector-specific standards remain underdeveloped. Post-closure rehabilitation - including soil stabilization and ecosystem restoration must be funded by the Mine Closure Fund. Continuous environmental monitoring and government audits supplement these rules, though enforcement gaps persist in conflict-affected regions like Kachin State, where illegal mining continues to cause ecological damage. (Law, 2018)

Common environmental and human rights impacts associated with limestone extraction and cement production include deforestation and damage to biodiversity, dust creation, with associated health impacts, as well as noise and vibration. Given the high energy demands of cement plants, often using coal, there are environmental and human rights impacts associated with the fuel and power source. (SWIA, 2018)

3.3 Community Engagement in Myanmar's Mining Industry

Mining projects in Myanmar increasingly recognize the imperative to integrate sustainability plans addressing the socioeconomic and environmental needs of adjacent communities. These plans, often framed within corporate social responsibility (CSR) initiatives or mandated by regulatory frameworks, aim to mitigate adverse impacts while fostering long-term local development. Key components typically include livelihood restoration, environmental protection, community health, and benefit-sharing mechanisms. However, implementation faces challenges due to regulatory gaps, limited enforcement, and complex ethnic-political dynamics, particularly in conflict-affected areas (MCRB, 2018; NRGI, 2020).

Community engagement in Myanmar's mining industry has been uneven and often limited, particularly due to weak governance, conflict-affected regions. While legal frameworks such as the Environmental Conservation Law (2012) and EIA Procedures (2015) require public consultation and stakeholder involvement, implementation has faced serious challenges on the ground. Although the Myanmar Investment Law (2016) promotes responsible investment and stakeholder consideration, weak enforcement means that communities remain unaware of their rights. Additionally, the Myanmar Extractive Industries Transparency Initiative (MEITI) aimed to foster public engagement and contract transparency.

Notable examples, such as the Letpadaung Copper Mine and the Myaing Kalay Cement Factory, highlight persistent concerns about pollution, land use, and the lack of proper community consultation. For sustainable mining to be realized in Myanmar, there must be a shift toward transparent, inclusive, and continuous dialogue with affected communities, supported by enforceable legal and institutional mechanisms.

Progressive projects adopt participatory approaches, such as the "Free, Prior, and Informed Consent" (FPIC) principles advocated by ethnic civil society organizations. For example, the Heinda tin mine (Dawei District) established a community liaison committee to allocate funds for water purification systems, compensating for river contamination (EJ Atlas, 2021). In Kayah State, a gold mining venture partnered with local NGOs to create a revolving microfinance fund supporting alternative livelihoods like poultry farming and weaving (MCRB, 2019). Despite such efforts, critiques persist over inequitable benefit distribution, with elites often capturing resources intended for marginalized groups (Kramer & Woods, 2022).

Sustainability plans prioritize ecological restoration, including land reclamation, water management, and pollution control. The Tagaung Taung nickel mine (Sagaing Region) invested in dry-stack tailings technology to reduce seepage into the Ayeyarwady River, alongside reforestation programs employing local villagers. Climate resilience is emerging as a focus, with projects like the Bawdwin lead-zinc mine introducing drought-resistant crop training for farmers displaced by mining operations. Nevertheless, artisanal and small-scale mining (ASM) sectors rarely receive technical or financial support, perpetuating mercury pollution and land degradation (ILO, 2020).

Community consultation, engagement and information sharing

Analysis of community engagement in Myanmar’s mining sector reveals significant shortcomings across consultation, environmental and social impact assessment (EIA) processes, and grievance mechanisms. Mining companies often conduct limited or superficial consultations, primarily engaging village leaders or elites rather than the broader community, including women and marginalized groups. Information sharing is infrequent and typically lacks transparency, with complex company structures and technical jargon further restricting meaningful participation. Consultation during EIAs is generally inadequate, with meetings held late, conducted mainly in Burmese without local language translation, and focusing more on environmental than social issues.

Many mining operations fail to involve communities altogether in impact assessments. Furthermore, operational-level grievance mechanisms are largely absent or informal, lacking accessibility, clarity, and responsiveness, resulting in unaddressed complaints related to land, pollution, noise, and compensation. This lack of effective engagement and grievance resolution fosters mistrust, social tensions, and unresolved conflicts between communities and mining operators. The broader legal and political context, featuring limited freedom of expression, government oversight weaknesses, and unclear regulatory requirements, exacerbates these challenges. To improve social and environmental responsibility in Myanmar's mining industry, adopting international best practices such as inclusive stakeholder engagement, transparent information sharing, effective grievance mechanisms, and alignment with standards like the UN Guiding Principles on Business and Human Rights is essential for respecting community rights and fostering sustainable development. (Community Engagement and Grievance Mechanisms Myanmar Centre for Responsible Business, n.d.)

3.4 Overview of Mining Sectors in Kayin State

Kayin State (also known as Karen State), located in southeastern Myanmar, is rich in diverse mineral resources and has untapped mining potential. Kayin State has over 22 types of mineral resources including limestone, coal, gypsum, gold, tin-tungsten, antimony, and zinc. However, limited systematic exploration and geological mapping have restricted the economic potential of these resources. The Myanmar government recognizes this untapped opportunity and promotes both local and foreign investment with a focus on environmental and social responsibility.

Table (3.6) Mineral Distribution of Kayin State

Sr.	22 mineral commodities are recorded in Kayin Stat	Sr.	Major important minerals in Kayin State
1	Alum shale	1	Limestone
2	Antimony	2	Antimony
3	Barite	3	Coal
4	Coal	4	Gold
5	Copper	5	Gypsum
6	Clay	6	Iron
7	Decorative stone	7	Tin- Tungsten
8	Dolomite,	8	Zinc
9	Garnet		
10	Gold		
11	Gypsum		
12	Iron		
13	Lead		
14	Limestone		
15	Mica		
16	Oil shale		
17	Quartz		
18	Phosphate		
19	Precious stone		
20	Tin- Tungsten		
21	Road stone		
22	Zinc		

Source: ([PPT] - Mineral Resources and Investment Opportunities in Kayin State Dr. PowerPoint Presentation - 556373, 2023)

Mineral development in Kayin State aligns with Myanmar's policy of promoting sustainable and green mining practices, prioritizing methods that minimize environmental impact. Industrial minerals such as limestone and coal form the backbone of local mining activities, primarily supporting cement production and energy generation, while gold and other precious minerals are extracted on a smaller scale. Both local and foreign investors are encouraged to pursue grassroots exploration, provided they comply with Myanmar's environmental regulations and mining laws. (MoNREC, 2017)

Table (3.7) Mineral and Sites by Township in Kayin State

Mineral	Site / Deposit name	Township (District)	Notes
Limestone (major industrial)	Myaing Ka Lay / Myainggalay quarry & cement plant	Hpa-an Township, Hpa-an District	Largest cement/limestone operation in Hpa-an area; captive coal power; major environmental & community issues.
Limestone (other karst hills)	Mi Kayin / Kyaw Byin hills (proposed quarries)	Hpa-an Township / surrounding hills	Proposed/existing quarry sites in karst hills; local opposition reported.
Antimony (stibnite)	Tha Byu (Thabyu) deposit	Kya-in-Seik-Kyi Township (southeast Kayin)	High-grade stratabound antimony in Mergui Group; historically noted deposit near Thai border.
Beryl / Amethyst / Quartz (gem/mineral localities)	Pharwi Taung (Kyeikdon / Kyaikdon village)	Kyain Seikgyi Township (Kawkareik District)	Documented occurrences of beryl and other collector minerals (Mindat locality).
Coal	Coal occurrences (general; mining zones)	Kya-in-Seik-Kyi Township & nearby areas	Coal seams supply local industry and captive power (e.g., cement plant).
Clay / Iron (industrial raw materials)	Myaing Ka Lay area (clay/iron occurrences linked to plant)	Hpa-an Township	Supplies raw material inputs for cement and local industries.
Marble / decorative stone	Kawmayan sample (Moulmein Limestone)	Phan / Hpa-an area	Marble sample registered from Kawmayan; decorative stone occurrences.

Table: (3.7) Mineral and Sites by Township in Kayin State (Continued)

Mineral	Site / Deposit name	Township (District)	Notes
Tin–Tungsten / Mixed concentrates	Regional occurrences (various prospects)	Various townships across Kayin	Part of broader tin–tungsten belt that passes near/through Kayin; mixed ore occurrences recorded.
Zinc / Lead-associated ore	Regional base-metal occurrences	Various (exploration records)	Lead–zinc occurrences reported in regional surveys.
Precious stones (gemstones)	Scattered gem-bearing sites (placer/local)	Various eastern Kayin / border areas	Gem occurrences form part of the eastern gem belt (rubies, others); mostly small-scale/ASM.
Other industrial minerals (gypsum, baryte, white clay)	Documented deposits	Multiple townships	Gypsum and other industrial minerals used in construction and local industry; recorded in state inventory.

Source: 1. ([PPT] - Mineral Resources and Investment Opportunities in Kayin State Dr. PowerPoint Presentation - 556373, 2023)

2. (Chapter 1 Hpa-an Township Environmental Assessment 2017 Myanmar Environment Institute, n.d.)

Geologically, Kayin remains underexplored compared to neighboring areas, especially along the 1,200 km tin-tungsten belt that traverses Kayin, Tanintharyi, Kayah, Mon, and Shan states; this belt contains over 480 known deposits with potential for further extraction.

Mining in Kayin encompasses both formal, mid-to-large-scale operations like quarrying for limestone, and informal artisanal activities, particularly in gold prospecting and base or precious metal occurrences. Environmental and regulatory weaknesses are common including poor law enforcement, environmental degradation, community exclusion from decision-making, and risk of conflict especially where ethnic armed groups are active in mineral areas (Myo Aung Myanmar. 2016)

According to the Hpa-an Township Environment Assessment (2017), mining and quarrying activities, particularly limestone extraction, have been identified as significant contributors to environmental stress in the area. The report notes that open-cut operations, blasting, and transportation generate dust pollution that affects air quality and can impact human health. In addition, these activities contribute to landscape alteration, habitat destruction, and soil erosion, which undermine biodiversity and natural ecosystem services in surrounding areas.

The assessment also points to water-related impacts, highlighting that runoff from mining sites can contaminate local streams and rivers, increasing sedimentation and carrying pollutants that affect aquatic life and drinking water sources. It warns that combined environmental degradation including air and water pollution, riverbank erosion, and deforestation not only damages the natural environment but also heightens community vulnerability to disasters such as flooding and landslides. These impacts have long-term implications for the livelihoods, health, and resilience of both rural and urban communities in Hpa-an Township. (*Chapter 1 Hpa-An Township Environmental Assessment 2017 Myanmar Environment Institute*, n.d.)

Despite these challenges, Kayin's mineral wealth is strategically important for Myanmar's construction and energy sectors. With effective governance, sustainable mining, and genuine community engagement (including Free, Prior, and Informed Consent, or FPIC), the state has significant potential for economic diversification and regional development.

Local Civil Society Organizations (CSOs) in conflict-affected mining areas use several strategies to push for fair and conflict-sensitive regulations. They advocate for legal and environmental justice by demanding access to information, community participation in Environmental Impact Assessments, and remedies for environmental harm. They empower communities with training and technical support to engage in negotiations and monitoring, and they facilitate dialogue among companies, authorities, and local people to build trust. They also push for transparency in licensing, revenues, and monitoring to reduce corruption. Together, these approaches aim to make mining governance more inclusive, equitable, and peace-oriented. *(Forestry Management and Peacebuilding in Karen Areas of Myanmar*, n.d.)

3.4.1 Overview of Limestone Mining Site in Myaing Kalay Area

The Myaing Kalay area in Kayin State is home to the largest cement factory in the Hpa-an region the Myaing Kalay Cement Plant which relies on a rich limestone seam running north to south through the state. Initially built in the 1980s with a capacity of 900 tons and expanded after 1990 to 4,000 tons, the plant is operated by the Myanmar Economic Corporation (MEC). Since around 2018, the factory has shifted from using natural gas and fuel oil to a coal-fired power system with a capacity of about 30 megawatts, consuming approximately 800 tons of coal daily. The limestone mined here is vital for cement production, supporting both regional and national construction needs, with well-known brands like "Rhino Cement" widely used. (https://geomatico.es, 2025)

However, the plant has long been the focus of community protests due to environmental and social concerns, including coal dust emissions, groundwater contamination, quarry dust, and inadequate environmental impact assessments or community consultations. NGO monitoring has detected elevated chlorine and phosphate levels in nearby water bodies, causing fish deaths and posing health risks to local residents. While the government has responded with measures such as installing boreholes and water purifiers, environmental issues like habitat loss, vegetation clearance, dust, and noise pollution from quarrying remain. (Global Energy Monitor, 2025)

Geologically, the exploited limestone seam is part of Kayin State's karst landscape, making it a significant contributor to Myanmar's cement and construction sectors. The mining operations are medium to large-scale, supported by infrastructure such as transportation networks and water supply from local streams and reservoirs. The Myaing Kalay site represents a key example of industrial-scale limestone mining in Kayin State combining high economic value with persistent environmental challenges and strong community opposition, which continue to attract public attention and require active monitoring. (https://geomatico.es, 2025)

The principal business actor at Myaing Ka Lay is the Myanmar Economic Corporation (MEC), which owns and operates the Myainggalay cement plant and its captive coal power station. The plant's operational chain involves coal suppliers, quarrying and hauling contractors, equipment and construction firms, local distributors (cement brands such as Rhino), and financiers. On the governance side, state ministries and township authorities handle permitting and (limited) mitigation measures, while NGOs and community groups (e.g., the Thanlwin Network and local villagers) act as

watchdogs and protest organizers. Tensions between MEC's operations and local communities are a persistent feature, driven by environmental impacts, contested compensation, and weak local oversight a dynamic documented repeatedly in news and NGO reports. (Business. 2025)

Limestone mining in Myaing Kalay has profoundly affected local communities, not only through environmental degradation but also in terms of social cohesion and trust. One of the most critical issues is the persistent lack of meaningful consultation and participation in mining decisions. Locals consistently report feeling excluded from discussions about mining operations, environmental risks, and mitigation measures. Environmental Impact Assessments (EIAs) and related information are often not communicated effectively, leaving communities unaware of the full extent of potential harms or of their rights to influence mining activities. This exclusion has generated deep distrust towards both mining companies and government authorities. In many cases, affected villagers have resorted to protests and public demonstrations to demand transparency, accountability, and the implementation of proper environmental safeguards. The weak engagement process undermines efforts to build social license for mining projects, escalating tensions and conflict. (https://geomatico.es, 2025)

CHAPTER IV
SURVEY ANALYSIS

4.1 Survey Profile

The survey was carried in six villages under 4 village tracts of Hpa-an township near lime stone mining area. The villages are Nat Kone, Hlar Kar, Zayatphyu, Mandalay Kone, Pan Kone and Yay Kyaw. The survey was conducted in 6 villages of Hpa-an township notably Nat Kone, Hlar Kar, Zayatphyu, Mandalay Kone, Pan Kone and Yay Kyaw. The villages are also close to cement factories where the large scale lime stone production are used for mass production.

Table (4.1) Household and Population of Selected Villages

Sr.	Village Tract	Village	Household	Male	Female	Total Population
1	Ya Thayt Pyan	Nat Kone	72	169	193	362
2	Hlar Kar	Hlar Kar	250	583	704	1287
3	Hlar Kar	Zayatphyu	364	832	991	1823
4	Myaing Ka Lay	Mandalay Kone	170	293	471	764
5	Myaing Ka Lay	Pae Kone	120	193	217	410
6	Yae Kyaw	Yay Kyaw	80	106	129	235

Source: Survey Data (2025)

The table (4.1) describes total population in selected six villages near mining areas. Zayatphyu is the most populated with 364 household and 1823 population. Nat Kone has 72 households, the smallest number among all villages listed. Pae Kone and Mandalay Kone have higher populations and household numbers than Nat Kone.

4.2 Survey Design

This study focuses on the factors influencing individual choices and the importance of gathering accurate information on personal preferences to better understand community perceptions. Community views on mining projects are shaped by several key influences, which can be grouped into five main categories: demographic factors, environmental, economic, social, and governance. The study used a mixed-method design utilizing both qualitative and quantitative methods to explore the perception of community for sustainability for local mining in their community.

The survey questionnaire was categorized into five sections. The first section was general information about the villagers such as age, education, occupation, family members, etc. The second section covered the environmental impacts due to mining project and how to mitigate the negative impact. The third part focused on Economic Impact and the fourth part is social impact. The last part stated the governance and community participation on mining project.

The data collection was carried out between May and June in 2025. The collected data was analyzed both quantitatively and qualitatively through various analytical tools including tables and percentages where applicable. The survey findings revealed that enhancing local decision-making inclusion through multiple approaches, deeper community participation to ensure grassroots voices are heard and acted upon, effective communication strategies, are considered vital for widespread resident engagement.

4.3 Survey Result

The survey findings were analyzed to provide a comprehensive understanding of the impacts of the limestone mining project in the Myaing Ka Lay area of Hpa-an Township. The analysis was categorized into four broad areas: Environmental Impact, Economic Impact, and Social Impact, and Governance and Community participation in mining project.

4.3.1 General Information about the Respondents

There are 130 respondents participated in the survey. Among them 68 are male and 62 are female.

Table (4.2) Number of Survey Data Collected by Villages

Sr.	Village	Number of Respondents			%
		M	F	Total	
1	Nat Kone	6	4	10	8
2	Hlar Kar	14	16	30	23
3	Zayatphyu	22	18	40	31
4	Mandalay Kone	13	12	25	19
5	Pae Kone	8	7	15	12
6	Yay Kyaw	5	5	10	8
	Total	**68**	**62**	**130**	**100**

Source: Survey Data (2025)

Among 6 villages, the village with most respondents is Zayatphyu representing 31% of total respondents and Nat Kone and Yay Kyaw are the least with 10% respectively. Yay Kyaw has 80 households and 235 people while it has more households than Nat Kone, its population is lower per household, indicating smaller family sizes.

Table (4.3) General Information of Respondents

Sr. No.	Description	Frequency	%
1	**Gender**		
	Male	68	52
	Female	62	48
	Total	**130**	**100**
2	**Age Group**		
	18 to 24	18	14
	25 to 34	25	19
	35 to 44	28	22
	45 to 54	37	28
	55 and above	22	17
	Total	**130**	**100**
3	**Current Occupation**		
	Farmer/Fisherman/Gardener	52	40
	Employee (government, private)	14	11
	Dependent	16	12
	Casual Labor	48	37
	Total	**130**	**100**
4	**Education Status**		
	No formal education	21	16
	Primary school	34	26
	Middle school	29	22
	High school	33	25
	Graduate	13	10
	Total	**130**	**100**
5	**Family member**		
	Under 5	72	55
	Above 5	58	45
	Total	**130**	**100**
6	**Family with under 15**		
	Yes	69	53
	No	61	47
	Total	130	100
7	**Resident or Not**		
	Yes	86	66
	No	44	34
	Total	**130**	**100**

Source: Survey Data (2025)

The table describe the general information of respondent, among them, 68 were male and 62 were female. The table illustrated the largest group of respondents of the respondents were 45-54 (28%), followed by 35-44 (22%). The smallest group was under 25 representing (14%). Regarding education, out of the total respondents, the majority (26%) had completed primary education. The next most common level was high school, with 25%, followed by middle school at 22%. The least were graduate with (10%). Concerning occupation, the maximum respondents are farmers/gardener representing (38%) seconded by casual laborer (32%). The minimum groups were government or private employee by (13%).

The table continued family members of respondents. Among the 130 respondents, 72 (55%) reported having fewer than 5 family members, while 58 (45%) reported having 5 or more." In addition, the family with children under 15 years of age was representing 53%. With regard to residents or not questions, the majority were residents representing 66% and the minority were from other areas with 34%. It was found out most of the respondents are living in theses area for long time ago.

Section B: Environmental Impact

This section describes the respondents' perception on environmental impact due to mining project.

Table (4.4) Community Perception on Environmental Impact

No.	Particulars	Mean	SD
2.1	To what extent do you agree that limestone mining has caused visible environmental damage in your area? "(e.g., deforestation, soil erosion, water contamination)?"	4.32	0.57
2.2	Dust and air pollution negatively affect health and quality of life in your areas (e.g coughing, breathing difficulties, …).	4.59	0.5
2.3	Local water sources (rivers, wells, streams) changed in quality (Color, smell, taste, drying up, etc.) or availability since the mining began.	4.19	0.66
2.4	Concerns increase about having enough clean water for your community daily needs due to mining activities.	4.22	0.68

Table (4.4) Community Perception on Environmental Impact (Continued)

No.	Particulars	Mean	SD
2.5	Mining operations are getting restricted your community's use of land for farming, grazing, or cultural practices.	4.17	0.76
2.6	Reduction in wildlife or forest areas due to mining activities has been observed.	4.13	0.83
2.7	Disturbances (e.g., loud noise, house shaking) due to blasting from the limestone mine has increased and blasting ever caused damage to your property (e.g., cracks in walls, broken windows).	4.37	0.62
2.8	I have noticed waste (e.g., chemical runoff, dust piles, debris) being left unmanaged around the mining site or in nearby areas.	4.27	0.6
2.9	The government or company has not responded effectively to environmental concerns raised by the community.	3.84	0.92
2.10	The mining company has not taken enough steps to reduce environmental damage (e.g., reforestation, dust control, safe waste disposal).	3.75	0.96
2.11	Community is not involved in environmental decision-making.	4.15	0.73
	Overall Mean Value	**4.18**	**0.71**

Source: Survey data (2025)

Based on the survey responses regarding environmental concerns related to large-scale limestone mining in Myaing Ka Lay area, the overall mean value was 4.18, indicating a high level of community concern and agreement with the negative environmental impacts. Respondents widely perceived that mining activities have caused visible environmental damage, such as deforestation, soil erosion, and water contamination. Many reported an increase in health problems like coughing and respiratory issues due to dust and air pollution. Changes in water quality and availability were also noted, leading to rising concerns about access to clean water. Additionally, mining operations were said to have restricted traditional land uses, and there were frequent disturbances from blasting, with some households reporting property damage. A significant number of respondents observed waste left unmanaged near mining sites. Overall, there was a strong belief that the government and companies have not taken

sufficient action, and the community has not been adequately involved in environmental decision-making, further contributing to local frustration and distrust.

Regarding the question on the issues related to environmental damage caused by the large-scale limestone mining project was asked openly. The responses indicate that the most commonly reported environmental concern among respondents is air pollution and its related health impacts, cited by over one-fourth of participants. Water pollution and the loss of natural water resources is mentioned by nearly one-fourth. Forest destruction and threats to wildlife accounted for one-fifth of responses, while land degradation and structural damage were identified by about one-seventh of respondents. Lastly, climate change and the loss of natural beauty or landscape aesthetics were noted by around one-eighth. Overall, the findings highlight that the majority of respondents are primarily concerned about pollution-related issues and their direct impact on both health and the natural environment.

The survey findings on actions needed to mitigate environmental impact from large-scale limestone mining highlight several key priorities. Systematic and legal mining operations were identified by the respondents as the most critical action, emphasizing the need for regulated extraction, enforcement against illegal mining, and adherence to proper procedures. Environmental conservation and restoration are spoke out with suggestions such as reforestation, protecting natural landscapes, and conserving water sources. Community engagement and education accounted, reflecting the importance of involving local communities in decision-making and raising awareness through environmental education. Health and waste management was mentioned, underscoring concerns about pollution control and public health monitoring. Lastly, Policy support, Environmental Impact Assessments (EIA), and multi-sector collaboration were recommended, pointing to the need for coordinated efforts among government, private sector, and civil society to ensure responsible and sustainable mining practices.

Section C: Economic Impact

This section expressed the survey result on the economic impacts by the community.

Table (4.5) Community Perception on Economic Impact

No.	Particulars	Mean	SD
3.1	Members of your community has not received any job opportunities related to the large-scale limestone mining project in Myaing Ka Lay.	3.69	0.77
3.2	Mining jobs in Myaing Ka Lay does not provide stable, long-term employment for local workers.	3.93	0.69
3.3	Local farms or small businesses in your area have faced difficulties hiring workers due to people leaving for jobs at the limestone mine.	3.21	0.88
3.4	The profits or benefits from limestone mining are not shared fairly with local communities (e.g., through jobs, community programs, local investments).	4.48	0.57
3.5	My household's income has not increased since the limestone mining operations began in the Myaing Ka Lay area.	4.28	0.71
3.6	There have not been any improvements to local infrastructure (e.g., roads, schools, health clinics, power supply) in your village as a result of the limestone mining project.	3.58	1.09
3.7	There has an increase in land prices, rent, or cost of daily goods and services in your area since the limestone mining began.	3.45	0.9
3.8	The benefits the most from limestone mining activities mainly go to the wealthy, business owners or non-local investors rather than to the local residents.	3.94	0.9
3.9	The economy of Myaing Ka Lay area does not depend on the limestone mining industry (e.g., jobs, services, trade).	3.74	0.88
3.10	If the limestone mining operations were stopped, your livelihood or that of your neighbors would not be significantly affected (e.g., loss of income, reduced business).	3.73	0.92
	Overall Mean Value	**3.80**	**0.83**

Source: Survey data (2025)

The overall mean value of 3.8 for the Likert-scale responses indicates that community perceptions lean toward moderate to high agreement with the negative economic impacts of the large-scale limestone mining project in Myaing Ka Lay. Many respondents expressed that members of their community have not received job opportunities from the project, some expressed the education level is barrier to get the higher job and that the available mining jobs are unstable and not reliable for long-term employment. A noticeable number agreed that local farms and small businesses struggle to hire workers, suggesting that the mining industry may be pulling labor away from traditional livelihoods.

There is a strong perception that economic benefits from the project are not fairly shared, with few local investments or job creation. The benefits are received from non-residents business men. A majority reported that their household income has not improved, and they have not observed significant improvements to local infrastructure such as roads, schools, or clinics. In some villages, the road conditions are severe due to heavy mining trucks for limestone carrying. Additionally, many noted that land prices and the general cost of living have increased, further straining local families. Some move to very far places due to high cost of living. The belief that the main beneficiaries of mining are wealthy outsiders or business owners rather than the local population is widespread. Respondents also indicated that Myaing Ka Lay's economy is not heavily dependent on the mining industry, and if operations were halted, most local livelihoods would not be severely affected, reflecting limited economic integration of mining into the broader community.

Perception of changes in economic situation due to mining project was observed with open questions. Regarding changes on household's economic situation due to mining project, 35% expressed negatively yes, the majority 65% said there was nothing changes. The most highlight issue is no improvement on economic but health condition. Other issues are no benefit of limestone business, rising of commodity prices and the health condition affected due to inhaling of polluted air.

The question about the economic benefits of the limestone mining are distributed fairly and equitably was asked for qualitative answers. The respondents stated that economic benefits from limestone mining should be distributed more fairly through transparent policies and inclusive community participation. They emphasized the importance of creating quality job opportunities for local residents, ensuring equitable profit-sharing from the outset of contracts, and addressing the social and

economic needs of the local population. Several responses called for well-defined and actively implemented Corporate Social Responsibility (CSR) programs that support infrastructure development such as schools, hospitals, and clinics. Additionally, respondents urged companies to be accountable for environmental and health damages, and to consider alternative and sustainable development options like eco-tourism. Overall, the community stressed local priority, policy clarity, and transparency to ensure the region's development is both fair and inclusive.

Section D: Social Impact

This section describes the respondents' perception on social impact due to mining project.

Table (4.6) Social Impact of Large-Scale Limestone Extraction Project

No.	Particulars	Mean	SD
4.1	Since the limestone mining project began, I have noticed changes in trust, cooperation, or unity among neighbors or within the village.	3.08	1.07
4.2	I have observed an increase in conflicts, disputes, or safety concerns (e.g., theft, arguments, fights) in my village since the mining project started.	3.66	1.01
4.3	I feel that traditional festivals, religious events, or cultural practices in my village have been disrupted or reduced since the mining project began.	3.58	1.03
4.4	The arrival of migrant workers from outside the village affected local ways of life (e.g., housing, behavior, food, language, or social norms).	3.91	1.01
4.5	The mining company does not provide any support (e.g., donations, sponsorships, volunteer work) for local events, festivals, or community gatherings in my village.	3.72	0.95
4.6	Increase in people moved into or out of my village since the limestone mining project started affected my community (e.g dealing with strange people, leaving of friends and neighbors).	4.22	0.89

Table (4.6) Social Impact of Large-Scale Limestone Extraction Project (Continued)

No.	Particulars	Mean	SD
4.7	Anyone in my village were not consulted, informed, or included in decision-making processes before or during the mining project's implementation.	3.72	1.02
4.8	There is seen no significant improvements in school facilities or health clinics in my area that are linked to support from the mining project.	3.8	1
4.9	The limestone mining project did not contribute to building or improving roads, schools, clinics, or other community infrastructure in your village.	3.74	1.01
4.10	The mining project has not much improved the overall quality of life (e.g., safety, harmony, access to services, access to education, and community relations).	4.09	0.9
	Overall Mean Value	**3.75**	**0.99**

Source: Survey data (2025)

The table (4.6) describe the Likert-scale responses regarding the social impact of the large-scale limestone extraction project in Myaing Ka Lay, the overall mean value of 3.75 reflects a moderate to high level of concern among community members. Respondents reported noticeable changes in social relationships, including reduced trust, cooperation, and unity within the community due to increase of migrants. Many observed an increase in disputes, safety concerns, and social tensions, along with a decline in traditional customs, festivals, and cultural practices. The entry of migrant workers has also influenced local lifestyles, with changes in housing, behavior, and community norms.

Additionally, villagers noted that the mining company has not provided support for local social activities or cultural activities in cash or kinds, and that there was no proper consultation or inclusion of local residents in the decision-making process before or during the mining project's implementation. A significant number of respondents pointed out that no major improvements in schools or clinics have been made, only the area near cements factories has accessible and some even face difficulty accessing these services due to poor road conditions or restrictions near the mining site. The community

perceives that the project has not meaningfully enhanced their overall quality of life, and in some cases, it has even worsened their access to essential services and social well-being. These findings suggest weak social responsibility and limited stakeholder engagement, which could undermine trust and cooperation.

The survey results about perception on mining impact to culture and social life indicate that there are losses of cultural heritage as the most significant impact of limestone production, citing damage to traditional practices and heritage sites. Economic and social impacts cause the issues such as migration, increased living costs, and a decline in livelihoods and mentioned health effects, including respiratory and general health problems. These findings reflect a broad spectrum of community concerns, especially cultural, social and economic vulnerabilities linked to large-scale limestone production.

The respondents suggest to reduce the undesirable social impacts resulting from limestone production project. The survey results show that the respondents emphasized the importance of community participation and consent, calling for inclusive engagement and regular consultations with local people. In regard with environmental protection and sustainable extraction, some respondents suggest for reducing over-extraction and conserving natural resources. They highlighted the need for local employment and prioritization, recommending that job opportunities be given to local residents. Some focus on policy and regulatory enforcement, advocating for proper implementation of Social Impact Assessments (SIA) and stronger legal accountability. Meanwhile, the importance of transparency and corporate social responsibility and public education and awareness as well as expressing uncertainty or being unable to respond are stressed to be informed. These results underscore the local community's desire for participatory governance, environmental safeguards, and fair socioeconomic benefits in relation to limestone extraction projects.

Section E: Governance and Community Participation

This section represents the perception on governance and participation of community in mining project.

Table (4.7) Governance and Community Participation

No.	Particulars	Mean	SD
5.1	Local authorities in my village have not taken action or provided support in response to concerns raised about the limestone mining project.	4.38	0.72
5.2	When community members report environmental or social problems caused by the mining project, local authorities do not respond quickly or effectively.	4.47	0.72
5.3	I or other community members have not been invited to attend or participate in meetings or discussions on how land, water, or forest resources are managed in relation to the mining project.	2.04	0.83
5.4	When villagers report problems or make suggestions to the mining company (e.g., noise, dust, waste, access), the company does not provide feedback or take action.	4.17	0.91
5.5	There is no clear physical separation or buffer area (e.g., trees, walls, restricted distance) between the mining site and nearby homes or farms in my village.	3.99	0.88
5.6	I believe that local government authorities and the mining company do not regularly coordinate or share information on how the project affects the community. (e.g., regulations regarding environmental management, land use, and permitting for mining operations.)	4.46	0.72
5.7	No community committee has been formed to monitor or discuss the limestone mining project, or even if it exists, it does not include actual representatives from our village.	3.78	0.96
5.8	Information shared by the mining company (e.g., project plans, impacts, community benefits) is often unclear, not detailed, or hard to trust.	4.4	0.73

Table (4.7) Governance and Community Participation (Continued)

No.	Particulars	Mean	SD
5.9	Project-related documents, reports, or decisions are not shared publicly in the village or posted in places where the community can easily access them. (project documents (EIAs, SIAs),	4.4	0.73
5.10	Community members are not aware or informed how long the limestone mining project is expected to operate, or whether there is any plan for closing and rehabilitating the mining site.	3.92	1.09
5.11	I have never been asked for my opinion or included in any decision-making process regarding how land, forest, or water resources are used or affected by the mining project.	4.38	0.78
	Overall Mean Value	**4.04**	**0.82**

Source: survey data (2025)

Based on the survey findings regarding community perceptions of governance and participation in the large-scale limestone mining project in Myaing Ka Lay, the overall mean score of 4.04 (on a 5-point Likert scale) with a standard deviation of 0.82 indicates a strong level of dissatisfaction and limited engagement of the local community in project-related governance processes. Below is an explanation of the results for each statement to reflect the local situation more clearly:

Many respondents feel that local authorities have not taken any meaningful action or provided support when the community raised concerns about the negative effects of the mining project. This suggests a gap in responsiveness and accountability from local leadership. When environmental or social issues arise (e.g., dust, water pollution, road access), the authorities are perceived as slow or ineffective in addressing them, leading to frustration and a sense of neglect among community members. The community has largely been excluded from discussions or meetings related to how natural resources such as land, water, and forests are managed in connection with the mining project. This reflects a lack of participatory planning and weak community involvement in decisions that directly affect their environment and livelihoods.

Respondents reported that when they voice concerns or offer suggestions to the company about issues such as noise, dust, waste, or road access, there is little to no response or action taken, indicating a breakdown in community-company communication and accountability.

Many villagers noted the absence of a buffer zone (such as vegetation, fencing, or a safe distance) between their homes and the mining site, which increases exposure to dust, noise, and other disturbances, and raises safety concerns. Community members perceive that there is no effective coordination or communication between local authorities and the mining company, which results in unaddressed concerns and inconsistent messaging to the public. In addition, the result showed either no monitoring committee exists, or if one does, it does not include representatives from their actual villages, meaning the voices of affected people are not heard in any formal structure. The information shared by the company is often vague, incomplete, or difficult to understand, leading to mistrust among the villagers regarding the project's purpose, impacts, or promised benefits. Most respondents reported that important project documents (plans, permits, impact assessments) are not available in public spaces or shared with the village, limiting transparency and informed participation. There is a widespread lack of awareness about the expected lifespan of the project or any closure and rehabilitation plan, which creates uncertainty about the future environmental and economic implications. Finally, respondents overwhelmingly stated that they have never been involved in decision-making processes about how natural resources are used or managed, revealing a complete disconnect between the community and decision-makers.

In summary, the data suggests that governance structures around the limestone mining project in Myaing Ka Lay are perceived as non-inclusive, non-transparent, and unresponsive, leaving the community feeling disempowered and uninformed. The high mean value (4.04) across these indicators reflects consistent dissatisfaction and a pressing need for more participatory governance, improved communication, and accountability in project implementation.

Perception on Community involvement in decision making process

The survey results shows that only a small fraction of local community members had been involved in decision-making processes related to limestone production activities, while the vast majority reported no involvement. Among those who did participate, each respondent highlighted specific concerns: discrepancies between the officially permitted and actual land use areas, encroachment into community-managed ancestral forest lands, and ongoing efforts to resolve these issues through collaboration with local communities. This suggests that while community involvement is minimal, those engaged are addressing significant land use and environmental concerns.

Necessary Changes for Decisions Making regarding Local Matters

The respondents highlight several key areas for improving local decision-making inclusion. Firstly, legal and expert support is crucial for empowering communities with necessary guidance. Community participation is emphasized, advocating for greater grassroots involvement and ensuring that local voices are heard and their wishes acted upon. Effective communication through advertising and social media is vital to inform and engage residents widely. Good governance, transparent, practical systems, and proper committee consultations are necessary to build trust and ensure quality decisions. However, some respondents feel that due to the current national situation, meaningful change seems unlikely, reflecting challenges and skepticism. Overall, there is a strong desire for openness, transparency, and active listening to foster genuine community inclusion in local matters.

Section F: Any additional suggestions

This section provides the additional suggestions or comments that the respondents would like to express on large scale lime stone mining project.

Table (4.8) Suggestion on Large-scale Lime Stone Quarrying Projects

Sr.	Description	Frequency	%
1	Annual reports on the amount and state of stone quarrying should be accessible to the public.	4	6
2	The opinions of local communities must be heard to improve Monitoring & Evaluation and the Community Feedback System.	13	20
3	There should be a strong emphasis on responsibility and accountability.	14	22
4	Information on the scale of quarrying, protections for locals, and the level of responsibility should be clearly available.	6	9
5	Any contract extensions for quarrying must be openly shared, including details of any negative effects.	11	17
6	Quarrying projects should be conducted in both densely populated and remote areas.	9	14
7	Production should be limited according to annual quotas.	8	13
8	It should be considered on the community health issue and produce only as necessary	7	11

Source: survey data (2025)

The survey results highlight key priorities regarding stone quarrying, with 22% of respondents emphasizing the importance of strong responsibility and accountability measures. Additionally, 20% stressed the need for incorporating local community opinions to enhance Monitoring & Evaluation and the Community Feedback System. Transparency is also a significant concern, as 17% advocated for openly sharing contract extensions and their impacts, while 15% (combining 9% and 6%) called for clear information on quarrying scale, local protections, and public accessibility of annual reports. Other notable points include conducting projects in varied locations

(14%), limiting production based on quotas (13%), and focusing on community health by producing only as necessary (11%). These findings reflect a comprehensive demand for accountability, transparency, community engagement, and environmentally conscious quarrying practices.

CHAPTER V
CONCLUSION

5.1 Findings

The survey examines community perceptions of the large-scale limestone mining project in the Myaing Ga Lay area of Hpa-an Township. The findings highlight local views on key dimensions on environmental, economic, social, and governance impact while underscoring the importance of active community participation.

Regarding environmental impact, the respondents indicated strong agreement on the negative environmental impacts of mining with general agreement with limestone mining poses serious environmental concerns. Water-related issues were a major concern, with declines in both quality and availability raising fears about safe drinking water. Mining was also reported to limit traditional land use and disrupt daily life through frequent blasting, sometimes causing property damage. Additionally, respondents noted unmanaged waste left near mining sites. The finding states that there is a clear consensus on limestone mining poses serious environmental risks, and a call for stronger accountability, better environmental safeguards, and more meaningful community participation.

Regarding economic impacts, respondents generally expressed neutral to negative views on the economic and livelihood benefits of large-scale limestone mining in Myaing Ka Lay. There was strong agreement that economic gains are unevenly distributed, with minimal benefits reaching local families. Many reported a lack of job opportunities from the project, citing education barriers to higher-paying roles and unstable, short-term mining jobs. The industry was also seen as drawing labor away from farms and small businesses, while offering little local investment or infrastructure improvement. Benefits were perceived to flow mainly to non-resident business owners, with rising land prices and living costs forcing some families to relocate. Additionally, road damage from heavy mining trucks was noted. Finally, residents felt the mining sector is not central to the local economy, and halting operations would have limited impact on most livelihoods

Regarding social impact, large-scale limestone mining in Myaing Ka Lay is perceived to have harmed social cohesion, with reduced trust, cooperation, and unity linked to increased migration. Respondents reported more disputes, safety concerns, and the erosion of traditional customs and festivals, alongside lifestyle changes influenced by migrant workers. The company was seen as offering no meaningful support for social or cultural activities and failing to consult residents. Little improvement in schools, clinics, or infrastructure was noted, with some communities facing poor access to services. Overall, positive social contributions were minimal, while negative impacts particularly from migration, lifestyle changes, and rising tensions were widely reported.

Regarding governance and community participation, the respondents generally disagreed or remained neutral regarding the effectiveness of community participation and responsiveness in project-related decision-making. Among the statements, the highest agreement was found with the formation of local committees composed of community representatives and the existence of a buffer zone between project sites and residential areas suggesting some recognition of structural inclusion and spatial planning

5.2 Suggestions and Recommendations

The findings highlight that the majority of respondents are primarily concerned about pollution-related issues and their direct impact on both health and the natural environment. Regarding governance and community participation, it is suggested room for improvement in certain areas such as timely responses to local concerns, transparency, and ensuring effective community participation in decision-making processes, calling for inclusive engagement and regular consultations with local people.

They emphasized the importance of creating quality job opportunities for local residents, ensuring equitable profit-sharing from the outset of contracts, and addressing the social and economic needs of the local population. Several responses called for well-defined and actively implemented CSR (Corporate Social Responsibility) programs that support infrastructure development such as schools, hospitals, and clinics. In addition, some emphasized the need for regulated extraction, enforcement against illegal mining, and adherence to proper procedures.

To address community concerns in Myaing Ka Lay, it is essential to provide legal and technical support so residents can understand project plans, risks, and rights,

while ensuring their genuine participation in all stages of the mining project through structured feedback mechanisms. Full transparency on project impacts, timelines, benefit-sharing is critical to rebuilding trust. These measures would move development toward a more inclusive, transparent, and rights-based approach, grounded in the community's lived experiences of disruption and exclusion.

The key findings highlight a strong emphasis on enhancing local decision-making inclusion through multiple approaches. Legal and expert support is seen as essential to empower communities with the guidance they need. There is a clear call for deeper community participation to ensure grassroots voices are heard and acted upon. Effective communication strategies, including advertising and social media, are considered vital for widespread resident engagement. Building trust and making quality decisions require good governance, transparent and practical systems, and thorough committee consultations. Nonetheless, some respondents express uncertainty about meaningful change due to the current national context, underscoring existing challenges. Environmental Impact Assessments (EIA), and multi-sector collaboration were recommended pointing that the need for coordinated efforts among government, private sector, and civil society to ensure responsible and sustainable mining practices.

Overall, the findings reveal a strong community desire for openness, transparency, and active listening to achieve genuine inclusion in local governance.

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APPENDIX

APPENDIX - A

Survey Questionnaire

A STUDY ON COMMUNITY PERCEPTIONS OF LOCAL MINING PROJECTS

(Case Study on Myaing Ga Lay Area, Hpa-an Township)

Part (1)

Demographic Information

1. Age: _____
2. Gender: ☐ Male ☐ Female
3. Education Level: _____
4. Occupation: _____
5. Household Size: _____
6. Family members with under 15: _____
7. Are you a local resident? ☐ Yes ☐ No
8. Village Tract/Township: _____

Part (2)

Instructions: Please indicate your level of agreement with the following statements.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

Section A: Environmental Impact

No.	Particulars	1	2	3	4	5
2.1	To what extent do you agree that limestone mining has caused visible environmental damage in your area? "(e.g., deforestation, soil erosion, water contamination)?"					
2.2	Dust and air pollution negatively affect health and quality of life in your areas (e.g coughing, breathing difficulties, …).					
2.3	Local water sources (rivers, wells, streams) changed in quality (Color, smell, taste, drying up, etc.) or availability since the mining began.					
2.4	Concerns increase about having enough clean water for your community daily needs due to mining activities.					
2.5	Mining operations are getting restricted your community's use of land for farming, grazing, or cultural practices.					
2.6	Reduction in wildlife or forest areas due to mining activities has been observed.					
2.7	Disturbances (e.g., loud noise, house shaking) due to blasting from the limestone mine has increased and blasting ever caused damage to your property (e.g., cracks in walls, broken windows).					
2.8	I have noticed waste (e.g., chemical runoff, dust piles, debris) being left unmanaged around the mining site or in nearby areas.					
2.9	The government or company has not responded effectively to environmental concerns raised by the community.					
2.10	The mining company has not taken enough steps to reduce environmental damage (e.g., reforestation, dust control, safe waste disposal).					
2.11	Community is not involved in environmental decision-making.					

2.12 In your opinion, what is one prominent issue related to environmental damage caused by the large-scale limestone mining project?

2.13 In your opinion, what is one critical action that should be taken to mitigate environmental damage?

Section B: Economic Impact

No.	Particulars	1	2	3	4	5
3.1	Members of your community has not received any job opportunities related to the large-scale limestone mining project in Myaing Ka Lay.					
3.2	Mining jobs in Myaing Ka Lay does not provide stable, long-term employment for local workers.					
3.3	Local farms or small businesses in your area have not faced difficulties hiring workers due to people leaving for jobs at the limestone mine.					
3.4	The profits or benefits from limestone mining are not shared fairly with local communities (e.g., through jobs, community programs, local investments).					
3.5	My household's income has not increased since the limestone mining operations began in the Myaing Ka Lay area.					
3.6	There have not been any improvements to local infrastructure (e.g., roads, schools, health clinics) in your village as a result of the limestone mining project.					
3.7	There has an increase in land prices, rent, or cost of daily goods and services in your area since the limestone mining began.					
3.8	The benefits the most from limestone mining activities mainly go to the wealthy, business owners or non-local investors rather than to the local residents.					
3.9	The economy of Myaing Ka Lay area does not depend on the limestone mining industry (e.g., jobs, services, trade).					
3.10	If the limestone mining operations were stopped, your livelihood or that of your neighbors would not be significantly affected (e.g., loss of income, reduced business).					

3.11 Has the large-scale limestone mining project caused any changes in your household's economic situation? If yes, please briefly describe.

3.12 Do you have any suggestions to ensure that economic benefits are distributed fairly and equitably among community

Section C: Social Impact

No.	Particulars	1	2	3	4	5
4.1	Since the limestone mining project began, I have noticed changes in trust, cooperation, or unity among neighbors or within the village.					
4.2	I have observed an increase in conflicts, disputes, or safety concerns (e.g., theft, arguments, fights) in my village since the mining project started.					
4.3	I feel that traditional festivals, religious events, or cultural practices in my village have been disrupted or reduced since the mining project began.					
4.4	The arrival of migrant workers from outside the village affected local ways of life (e.g., housing, behavior, food, language, or social norms).					
4.5	The mining company does not provide any support (e.g., donations, sponsorships, volunteer work) for local events, festivals, or community gatherings in my village.					
4.6	Increase in people moved into or out of my village since the limestone mining project started affected my community (e.g dealing with strange people, leaving of friends and neighbours).					
4.7	Anyone in my village were not consulted, informed, or included in decision-making processes before or during the mining project's implementation.					
4.8	There is seen no significant improvements in school facilities or health clinics in my area that are linked to support from the mining project.					
4.9	The limestone mining project did not contribute to building or improving roads, schools, clinics, or other community infrastructure in your village.					
4.10	The mining project has not much improved the overall quality of life (e.g., safety, harmony, access to services, access to education, and community relations).					

4.11 How do you perceive the impact of the large-scale limestone production project on our traditional culture and social life?

4.12 What suggestions would you make to mitigate the undesirable social impacts associated with the large-scale limestone production project?

Section D: Governance & Community Participation

No.	Particulars	1	2	3	4	5
5.1	Local authorities in my village have not taken action or provided support in response to concerns raised about the limestone mining project.					
5.2	When community members report environmental or social problems caused by the mining project, local authorities do not respond quickly or effectively.					
5.3	I or other community members have not been invited to attend or participate in meetings or discussions on how land, water, or forest resources are managed in relation to the mining project.					
5.4	When villagers report problems or make suggestions to the mining company (e.g., noise, dust, waste, access), the company does not provide feedback or take action.					
5.5	There is no clear physical separation or buffer area (e.g., trees, walls, restricted distance) between the mining site and nearby homes or farms in my village.					
5.6	I believe that local government authorities and the mining company do not regularly coordinate or share information on how the project affects the community.					
5.7	No community committee has been formed to monitor or discuss the limestone mining project, or even if it exists, it does not include actual representatives from our village.					
5.8	Information shared by the mining company (e.g., project plans, impacts, community benefits) is often unclear, not detailed, or hard to trust.					

5.9	Project-related documents, reports, or decisions are not shared publicly in the village or posted in places where the community can easily access them. (e.g., environmental and project documents (EIAs))					
5.10	Community members are not aware or informed how long the limestone mining project is expected to operate, or whether there is any plan for closing and rehabilitating the mining site.					
5.11	I have never been asked for my opinion or included in any decision-making process regarding how land, forest, or water resources are used or affected by the mining project.					

5.12 Have local community members ever participated in the decision-making processes related to limestone production activities? If yes, please describe your experience regarding the nature of that participation.

5.13 What changes do you think are necessary to ensure your voice is more included in local decision-making processes?

Session E: Any additional suggestions

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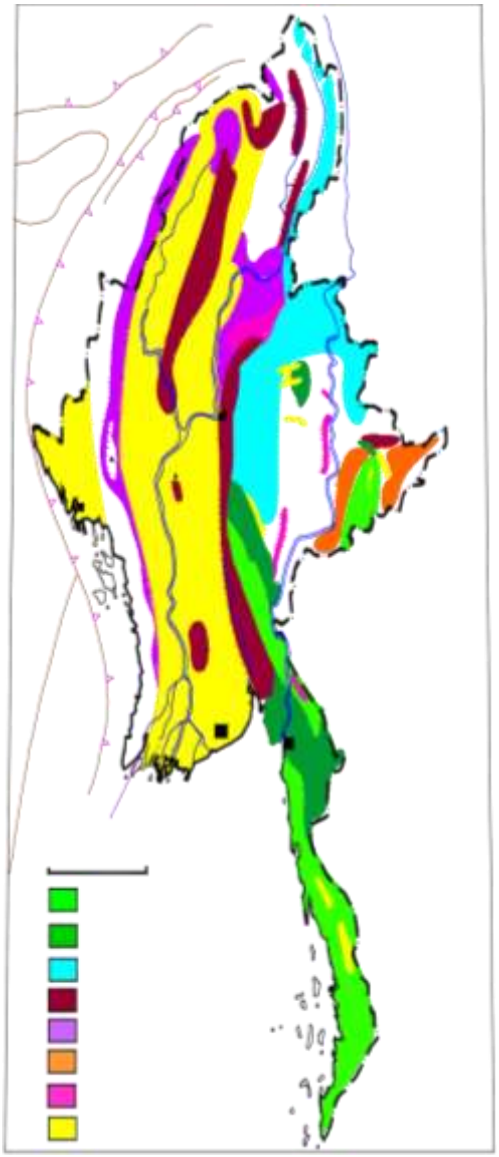
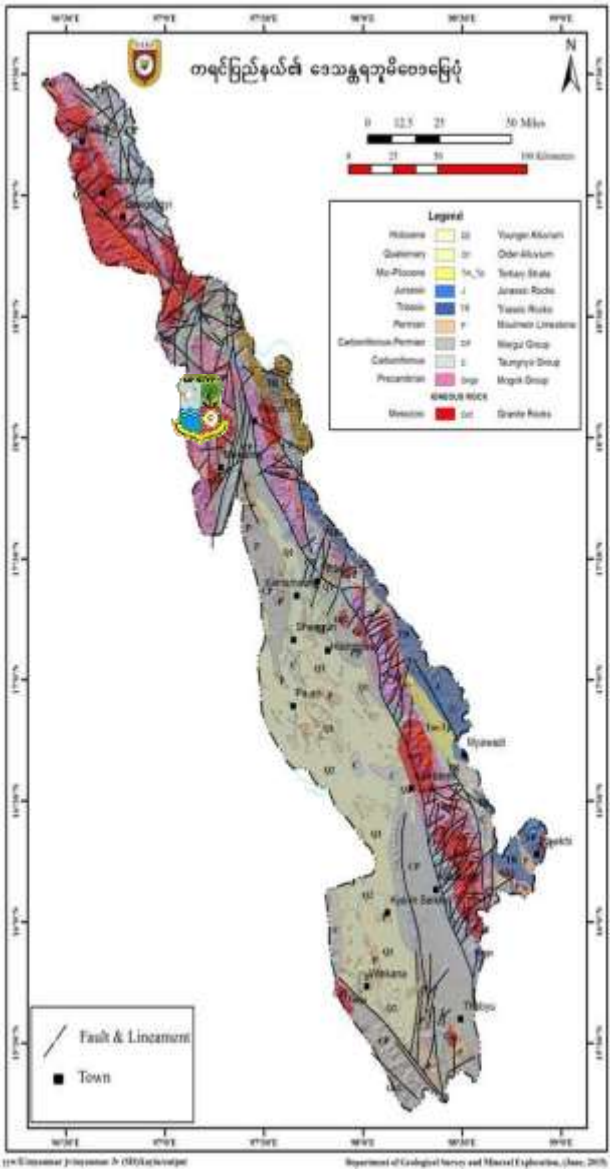
APPENDIX - B

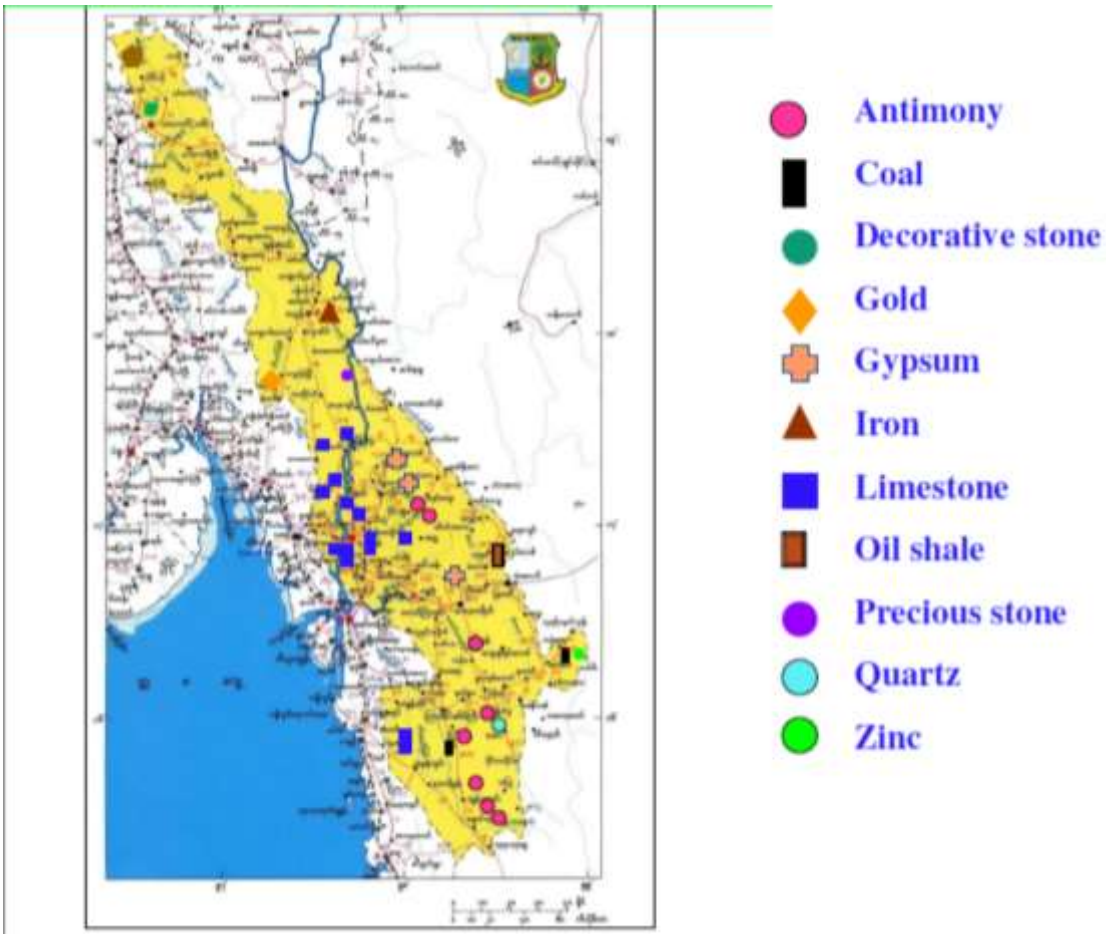
MINERAL PROVINCES OF MYANMAR



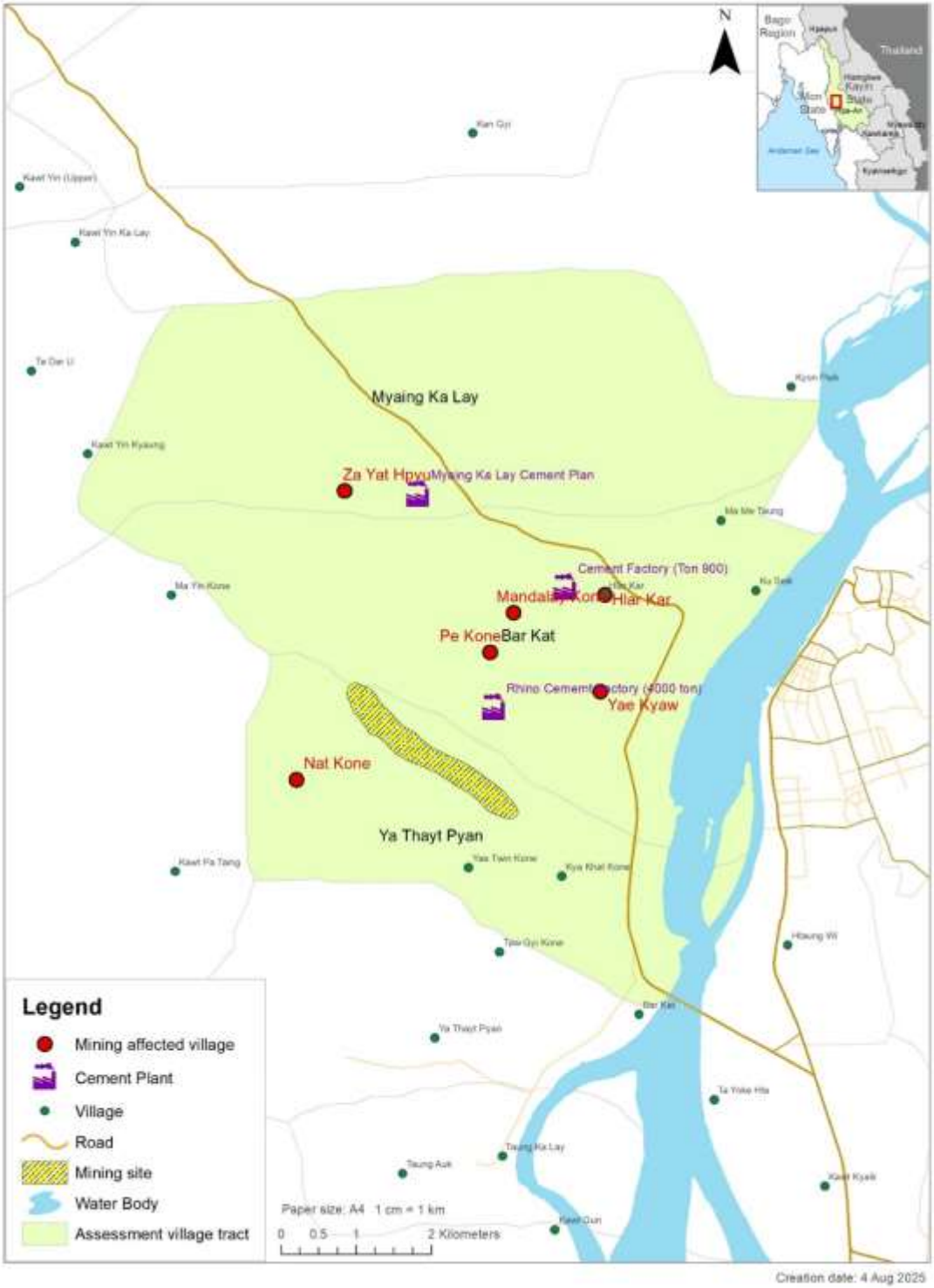
GEOLOGICAL MAP OF KAYIN STATE



MINERAL OCCURRENCES IN KAYIN STATE



Assessment for Mining Affected Location in Hpa-An Township



Creation date: 4 Aug 2025