

## Article

# Resettlement and Compensation Practice in the Context of the Tha Htay Hydropower Project in Rakhine, Myanmar

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**Abstract:** This research investigates the views of the resettled people regarding the practice of resettlement and compensation (RCP) to assess the developmental progress of the Tha Htay hydropower (THH) project and establish a resettlement relationship from various perspectives. In this paper, a convergent mixed research method was used for interpretations and analyses of the whole resettlement and compensation practice. Descriptive statistics were utilized to analyze the collected data on the resettlement practices of those participants who presented it by frequency and percentage of quantitative findings. The study revealed that educational facilities and development received the highest average rating from the participants, indicating a higher level of satisfaction. On the other hand, the current living situation and job opportunities received the lowest rating, indicating lower satisfaction in this aspect. Overall, the respondents expressed satisfaction with other indicators of the resettlement process, such as site selection, housing, compensation, and fundamental infrastructure services. Despite receiving foreign technical advisory assistance for resettlement and sustainable livelihoods for the resettled communities, the project fell short in providing agricultural or cultivation land as a replacement for those who relied on land-based livelihoods. It was verified that most of the resettled people seemed poorer than in the previous condition, and they were facing higher living standards without adequate income. It is therefore crucial for the project proponent to take active measures in supporting the three resettled Villages by providing agricultural land and assisting them in their livelihoods and overall living conditions, so as to ensure that the resettled households do not face long-term challenges in sustaining their livelihoods after the resettlement project.

**Keywords:** resettled people; resettlement; compensation; developmental progress; perspectives; livelihoods



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## 1. Introduction

Hydropower ranked as the third-largest contributor to global electricity generation in 2020, following coal and natural gas, which contributed 17% of global generation output, and its total capacity itself increased by 70% globally over the last two decades [1]. Today, almost half of the world's low-carbon electricity is currently generated by hydropower, making it an essential backbone of renewable energy. A 17% (230GW) increase in global cumulative hydropower capacity is also expected between 2020 and 2030, with capacity expanding from approximately 1330 GW to slightly above 1555 GW. Large-scale hydropower projects funded by the public sector have been the driving force behind the growth of hydropower on a global scale since the 1970s, particularly in emerging and developing economies [1]. Similarly, hydropower development has been a key feature of Myanmar's energy policy for several decades to meet the country's growing energy demand and reduce reliance on fossil fuels because the country has abundant water resources, particularly in its northern and eastern regions. So, the majority of electricity distribution is supplied to local areas of the country with the government's capital budget and exported with foreign

investment [2]. On harnessing water resources, the majority of Myanmar's hydropower projects are state-owned projects [3] and dam-type hydropower schemes [4] with the purpose of electricity generation and agricultural irrigation, out of 27 operational hydropower stations with a total capacity of 3221 MW networked with the national grid [5], despite the fact that run-of-river (ROR) schemes, which are able to generate electricity by their reliance on diverting a portion of a river's flow through turbines, are more interesting to mitigate environmental and social impacts. There are still over 50 additional hydropower projects (41,837.4 MW) planned for the future and eight hydropower projects (seven state-owned and one local developer) under construction in Myanmar, with 1691.6 MW of estimated installed capacity handled by the union government [5]. One of these projects is the ongoing construction of the Tha Htay Hydropower (THH) project (111 MW) situated in the Thandwe district of Rakhine state, which is the first-large hydropower project for the western region of Myanmar despite the identification of eight projects on seven rivers with hydropower development potential totaling 1155 MW in Rakhine [6].

Hydropower produces relatively low greenhouse gas emissions per unit of energy generated over the life cycle of a hydropower plant, along with various environmental benefits. Despite the many environmental benefits offered by hydropower, such as flood control and irrigation, concerns about its sustainability outweigh these advantages. For example, socio-economic issues related to both the short-term and long-term impacts of hydropower projects. These projects result in the displacement of local communities and impact on existing infrastructure due to changes in water levels. The estimation suggests that infrastructure development projects have resulted in the displacement of approximately 300 million individuals globally over the last two decades—an annual rate of approximately 10 to 15 million people—and that reservoir projects alone result in approximately four million people being displaced annually on a global scale. Therefore, around 472 million people have been impacted by the 7000 largest dams alone [7,8]. Therefore, the establishment and enforcement of robust sustainability standards are critical for realizing the vast potential of hydropower on a global scale. Then, adequately designed government policies play a vital role in minimizing the risks associated with addressing environmental and social acceptance challenges. However, the government's policy support in developing countries still remains limited in targeting the hydropower resettlement process, which is frequently the most challenging and contentious aspect of infrastructure and production development as it involves addressing a wide range of social, cultural, environmental, and livelihood concerns. Therefore, it is essential to engage the affected people in the decision-making process, offer adequate compensation to them, and facilitate the restoration of their livelihoods in order to ensure the fair distribution of project benefits. However, a lot of project practices have proven that displacement and reconstruction of displaced persons' livelihoods are the most difficult tasks in project development.

In Myanmar, the process of acquiring large-scale land for development projects is a multifaceted and challenging issue, and past experiences with resettlement projects have often led to conflicts and a lack of trust [9]. Thus, the involuntary reservoir resettlement is challenging project proponents, financing institutions, local authorities, and even researchers. According to Myanmar practice, land acquisition and resettlement have been conducted in line with the actual conditions of the area occupied for the construction of the hydropower development project and in conformity with the mainly relevant (1) policy and legal framework that establish the basis for environmental and social management, (2) regulations concerning ESIA Management based on project requirements for operational processes, and (3) laws pertaining to environmental protection and social impact management. In addition, there has been a plan to carry out the land acquisition, resettlement, and compensation program of the THH development in combination with the methods of the previous similar Upper Paunglaung Hydropower (UPH) project. However, the project proponents should have practiced and followed the specific methods of social stability, human rights, compensation, and livelihood restoration activities published in international standards or guidelines relevant to the large-scale hydropower resettlement projects

because the sector-wide approaches (SWAPs) of national laws, policies, and frameworks are still insufficient in Myanmar. Due to the negative socio-economic impact on the affected Villages and the resulting loss of people's livelihoods, international good practices such as the World Bank, the IFC, and the ADB recommend cash and in-kind compensation and livelihood restoration activities or other relevant supports when the livelihoods of displaced people are land-based in order to ensure that the replacement land provided to affected households is of equal or higher quality and productivity than the land they were previously occupying. In the case of the THH project, project proponents have not provided the replacement of agricultural land for those affected until the time of the field survey. Instead, they have provided the basic infrastructure services needed for resettled villages, apart from cash compensation for their asset and livelihood losses, because of the limitation of the hydropower project investment done by only the government capital budget. Without suitable agricultural land compensation and livelihood restoration activities, only those services are insufficient for a sustainable livelihood and local economic development after resettlement.

On the other hand, only three hydropower resettlement projects, namely Myintsone, UPH, and THH, have been executed in Myanmar, and their implementation has been hindered by inadequate policies and frameworks. As a result, there is a need to comprehensively improve the resettlement process, as there has been a lack of analysis on the resettlement practices and their impact on the affected communities in the context of hydropower development in Myanmar. This research seeks to bridge this gap by evaluating the developmental progress of the THH project and establishing a comprehensive understanding of the resettlement dynamics from various perspectives. Therefore, this research aims to understand the responses and some perceptions of resettled people, host villagers, and project proponents, and study perspectives on policy constraints in the process by picking out the development gaps and opportunities of the resettlement practice. For that reason, this study is to assess the impact of the resettlement process and its identified areas for improvement. Thus, the study on fruitfulness provides useful insights for practical contributions and policy recommendations to strengthen the further or future resettlement process due to the hydropower projects in Myanmar. This paper decides its goals mainly from a socio-economic perspective, but not from environmental or engineering disciplines in this regard. Therefore, the specific research questions to reach the above research objectives are as follows:

To what extent are physical infrastructure, socio-economic, and livelihood services provided by the project proponents?

What are the perceptions of resettled people towards the services provided?

What are project proponents' challenges in implementing resettlement and compensation practices?

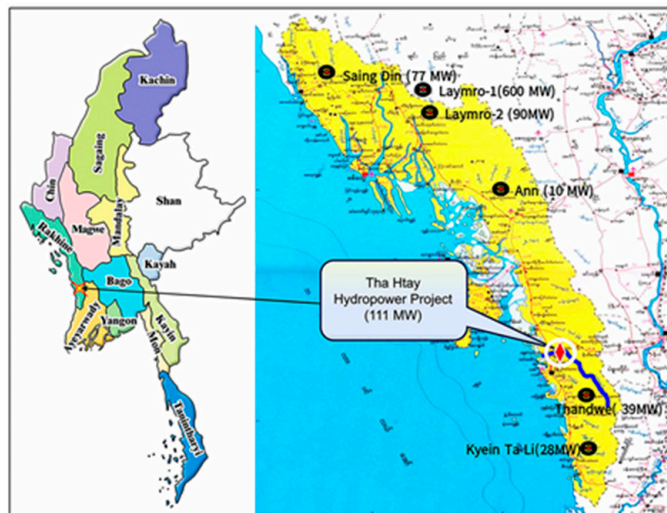
What are host communities' perspectives on the resettlement process?

## 2. Materials and Methods

### 2.1. Study Area

Rakhine State, the westernmost state of Myanmar, is situated in a tropical area that experiences abundant and concentrated rainfall throughout the rainy season. On seven rivers, there are eight planned hydropower projects, including Lemro 1 (600 MW), Lemro 2 (90 MW), Kyein Ta Li (28 MW), Mi Chaung (200 MW), Saing Din (77 MW), Than Dwe (39 MW), Tha Htay (111 MW), and Ann (10 MW), totaling 1155 MW. The Tha Htay river, following the Lemro River, holds great importance in Rakhine state. It stretches around 120 km from the northwest to the west, ultimately flowing into the Bay of Bengal at Shwe Hlay Village Tract. With a catchment area of 1293 km<sup>2</sup> and an estimated discharge of 100–120 m<sup>3</sup>/s at its mouth [10], the Tha Htay River shows its significance in the Rakhine region. The THH project in the Tha Htay River, as many as 19 km northeast of Thandwe Township, which is characterized by mountainous terrain with spurs of the Arakan Mountains extending to the coastline (Figure 1), initiated by MOEP (Ministry of Electric Power)

as a developer and funded by the Union Government of Myanmar, began construction in 2008. The dam is 92.5 m high, exceeding its original design height of 90.83 m. Although it was initially expected to be completed in 2021, the construction has been ongoing and has achieved a progress rate exceeding 73% as of November 2022.



**Figure 1.** Location map of the study area in Thandwe district of Rakhine state, Myanmar.

The completion and commissioning of the entire project are currently anticipated to take place during the fiscal year 2025–2026. Once operational, the power station will be linked to the Oakshitpin–Taungup transmission line, connecting it to the national grid. The objective of this project is to align with the Myanmar sustainable development plan strategy (MSDPS), which seeks to enhance the effectiveness and competitiveness of state economic enterprises, establish a foundational infrastructure that prioritizes sustainable growth and economic diversification, promote environmental preservation and functional ecosystems, enhance resilience to climate change, minimize exposure to disasters and unforeseen events while safeguarding livelihoods, facilitate the transition towards a low-carbon growth trajectory, and provide affordable and reliable energy to populations and industries through an appropriate energy generation mix in the national grid. Therefore, it is expected to generate revenue, create job opportunities for locals, and spur economic development in the region through the establishment of electricity-based industries. According to the statistics of the Myanmar Project Bank, the project is to facilitate the electrification of about eight million households after implementation. It is estimated that the project will generate approximately 386 million kWh of electricity on an annual basis and supply power to over one million residents throughout the country. This will enhance the quality of life for local people, create economic opportunities, and improve access to essential social services. The estimated total project cost is USD 285.90 million and is being financed through public domestic financing. The DHPI (Department of Hydropower Implementation) under MOEP is responsible for implementing the project. Approximately USD 27.4 million has been budgeted for the whole project in 2019–2020 [11]. On the other hand, up to November 2022, the total cost for resettlement work, out of the total project cost, including compensation, relocation, public infrastructure, road and related work, water supply, and electrification, was as much as MMK 12,075.269 million (USD 5.862 million). The following Table 1 illustrates the statistics of the project timeline for the THH and resettlement work [6].

**Table 1.** Project Timeline of Tha Htay Hydropower and resettlement work.

Timeline	Project Progressing Condition
April 2004	Preliminary survey assessments were conducted for the Tha Htay HPP.
December 2004	The project was approved by the Myanmar government.
June 2005	Detailed measurements were taken to finalize the location of the dam.
April 2008	Construction work began. Then, an inventory was compiled for the project, which impacted three Villages: Maewa, Payit, and Yegauk.
March 2009	Maewa Village was relocated to the new resettlement area.
March 2014	The 2008 statistical data for all three villages were recompiled.
January 2015	Initially, cash compensation was provided to the affected households of Maewa Village to cover the expenses of reconstructing their houses and compensating for the properties they had lost, including farmland, garden land, perennial plants, etc.
March 2016	Payit and Yegauk were provided with cash compensation for all their losses except housing compensation.
March 2020	The regional state government approved the designated resettlement area for Payit and Yegauk Villages. The project proponent started to clear the resettlement area.
October 2020	An additional inventory of the remaining two Villages was conducted. The project proponent prepared housing plots and constructed roads.
March 2021	A partial housing compensation of 30% was provided in advance to selected households from Yegauk and Payit Villages. Subsequently, a total of 75 households from Yegauk and 153 households from Payit were successfully relocated to the designated resettlement area.
April 2021	The remaining 233 households from Yegauk Village have been relocated to the resettlement area.
November 2022	The whole project work is 73% completed, but the resettlement work for Payit and Yegauk will be finished in late 2023 (except for rehabilitation, livelihood restoration, and economic development work).
2025–2026	The commissioning of the project is expected to be completed, but this is subject to the allocation of the government capital budget.

The resettlement work, involving the relocation of 500 households comprising 1591 people, began in March 2009 and continued in March 2021. The remaining resettlement work for Payit and Yegauk Villages, which is a part of the THH project, is expected to be completed by the end of 2023, regardless of adding rehabilitation and restoration activities. It is the second project under the Ministry of Electric Power, following the UPH project. The current resettlement site for Payit and Yegauk is relocated near the Thandwe-Taungup road, but the Maewa site is approximately 2 km away from that road. Both resettlement infrastructure and the THH project have been primarily funded by the Union government budget, without any investment from international financial institutions, but with technical assistance from NVE for mitigating environmental and social risks associated with relocation and resettlement of the affected households towards a sustainable hydropower project sustainability strategy.

## 2.2. Study Resettlement Site Selection

The selection of resettlement areas is a complex large-scale system problem because it is necessary to use the relevant theories of large-scale systems and multi-objective decision-making, considering natural resources, natural conditions, social economy, and several other sub-indicators. Therefore, it has a great impact on the resettlement work and the recovery and development of the resettled villages. There are many factors affecting the resettlement site selection, such as the natural conditions, economic level, resource status,

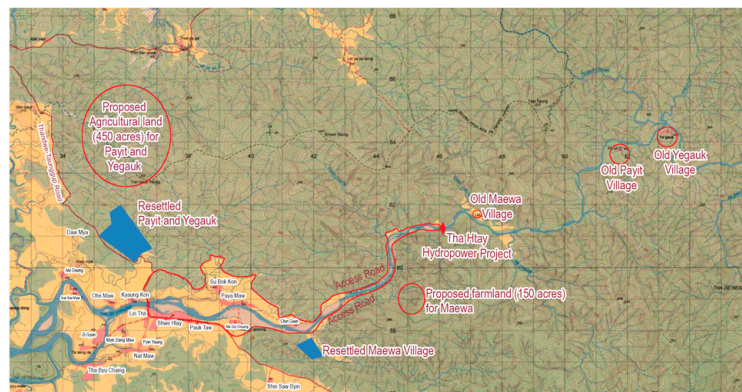
environmental capacity, living habits of displaced people, ethnic characteristics, ethnic relations, resettlement funds, etc. In addition to the basic living and production conditions, the resettlement sites involve the needs of resettled people in social, cultural, psychological, and other categories of customs, human feelings, and habits.

Due to the construction of the dam wall, the original Maewa Village, located near the upstream area at an elevation of only 16 m above sea level, had to be relocated in March 2009 under the government of the State Peace and Development Council. The village was involuntarily moved to a new site in order to avoid the rising water level caused by the dam's construction. The site is about 0.85 km away from Chin Gwin Village across the Tha Htay River and 2.5 km away from Ma Gyi Chaung Village in a straight line. The new site of Maewa is situated near the left bank access road of the hydropower project, which connects to the Taungup–Thandwe road and other locations. Even though it is closer to Ma Gyi Chaung, it is still, administratively, part of the Yegauk Village Tract. The total land acquisition area for the new Maewa Village was 163.5 acres, out of which 13.5 acres were allocated for housing, community utilities, and a graveyard. After the completion of the housing resettlement process, the displaced Villagers of Maewa were unable to access the remaining 150 acres of land intended for land compensation until the field survey was conducted. It was first due to disagreements with neighboring host villagers who claimed ownership of that compensating land (150 acres), with 16 villagers claiming 85% of the land due to growing crops and plants on the site, although they had no legal proof of land ownership. However, the local communities recognized them based on customary traditions rather than legal recognition. As a result, the resettled people were left without farming land, forcing some to return to their former upstream area and others to seek other employment or the hydropower project's employment for odd jobs. The project proponent, again, attempted to resolve the land issue by proposing the acquisition of 150 acres of agricultural land for the Maewa Villagers—a process that has been ongoing for 14 years until the resettlement field survey was conducted.

The remaining two villages, Payit and Yegauk, needed to be resettled because they would be flooded in the event of river water diversion, pressing layers of soil together to form a dense structure for the dam. The project proponent initiated the resettlement of these two villages. It was near their submerged villages across the mountains, which were 16.1 km away inside toward the mountains from Thet Kay Pyin Village; the land use classification was vacant land for the resettlement. After agreeing on the resettlement site with the Villager from Payit and Yegauk, they worried that it would be less developed, lack health care services, and always depend on the road towards Thet Kay Pyin village to reach the Taungup–Thandwe road. In case the road was broken because of a natural disaster, their resettled village would be disconnected from Thet Kay Pyin and other regions. Then, it would be much farther from the Shwe Hlay Village tract than the condition of their previous villages. Therefore, they had another preferred location to be resettled, which is between Jin Chaung weir and Daw Mya Village, 19.31 km away from the dam of the THH project, and 32.2 km away from the longest distance of the submerged Yegauk Village tract. It would be beside the Taungup–Thandwe road and close to the Shwe Hlay Village tract, which would provide easier access to Thandwe township in cases of emergency health and safety and better living conditions. The required area of land for resettled Villages was under the management of the Department of Forestry in the Shwe Hlay public protected forest. The project proponent proposed the acquisition of the 150 acres of land only for the resettlement of villages, considering the acquisition of agricultural compensation land would be submitted to the regional state government later separately. It was not comprehensive to consider the resettlement area only from the perspective of resettled people because the site was at a high elevation, and they only used the conventional method to select a resettlement site through qualitative analysis and comparison. Thus, this method was greatly affected by subjective factors and had certain blind spots. Then, the project proponent had to limit the number of resettled households according to the resettlement capacity of the 150 acres of land occupied. The results of site selection might



be unreasonable, and the land acquisition process for the resettlement of Payit and Yegauk Villages took nearly 10 years after the displacement of Maewa Village. After considering the opinions and preferences of the displaced people from both villages, the regional government approved the proposed resettlement site in March 2020. Then, the resettlement and rehabilitation implementation body relocated those two villages to their preferred resettlement sites in March and April 2021. Nevertheless, the acquisition of 450 acres of land compensation for Payit and Yegauk was still in progress until the resettlement survey was carried out. The resettlement of the two sample sites with their respective proposed agricultural areas is presented in Figure 2.



**Figure 2.** Study area and two sample sites with respective proposed agricultural areas.

### 2.3. Study Forms of Compensation

From the field survey, it was observed that major sources of people's livelihood in the original villages were rice and vegetable farming, including growing the crop on the alluvial lands formed by the deposition of sediments, and perennial plantations such as Da Nyin, peanut, coconut, palm, betel nut, mango, jackfruit, jengkol, tamarind, sweet lemon, lemon, guava, and other fruiting plants. Livestock raising, such as cattle, pigs, and chickens, was another important income earner as well as the source of food for households. The majority of casual households relied on natural forest products such as firewood, charcoal, logging, bamboo cutting and trading, and other natural forest products. A few people were fishing and eating bush meat for their daily meals.

The project proponent has taken over approximately 659.9 acres of land from three submerged villages, excluding household lands. Maewa Village, which originally had 39 households, was compensated for the acquisition of 188.61 acres of land, including 49.62 acres of farmland, 64.09 acres of upland, 48.6 acres of garden land, and 26.3 acres of garden land in the protected forest. Similarly, Payit Village, with 153 households, received compensation for the acquisition of 173.79 acres of land, including 52.67 acres of farmland, 39.92 acres of upland, 55.2 acres of garden land, and 26 acres of garden land in the protected forest. Yegauk Village, with 308 households, was compensated for the acquisition of 297.5 acres of land, including 74.33 acres of farmland, 130.07 acres of upland, 76.1 acres of garden land, and 17 acres of garden land in the protected forest. The average occupied land ratio per household for Maewa was 4.84 acres/household, which was the highest ratio among the three Villages.

The relocation has influenced the livelihood opportunities of affected people due to changes in their location. Maewa Village underwent its first relocation in March 2009, but unfortunately, no form of compensation was provided. In 2010, Myanmar witnessed its initial democratic election and massive political change following the implementation of the new constitution in 2008. In 2014, the 2008 statistical data for Maewa, Payit, and Yegauk was once again gathered. It was in January 2015 that Maewa finally received compensation for the expenses involved in rebuilding their houses and recovering their lost properties from the 2009 displacement and resettlement; it took nearly six years for

Maewa to receive any compensation after the process of relocation. In March 2016, the people affected by the project in Payit and Yegauk Villages were provided compensation for various losses, such as farmland, garden land, taungya, upland land or alluvial land, and perennial plants, four years prior to relocation and resettlement. However, housing compensation to rebuild their houses was not included in the first compensation package. The compensation provided was a one-time payment, and all the resettled households received cash compensation for the lands, seasonal crops, perennial plants, and other assets they had lost. This compensation was based on the local market value and compensation practices experienced from the previous UPH Project in the negotiation with the project-affected households.

On 18 March 2021, 30% of housing compensation was first supported for some households in Payit and Yegauk, just a couple of days before they were displaced. As a batch-by-batch payment (30% before relocation, 40% after installing the framework of housing, and the next 30% after building their houses in accordance with the design of the agreement), cash compensation was provided to the affected people to build their houses. It was found that the housing compensation rate of Payit and Yegauk was higher than that of Maewa Village. Moreover, each casual household in Maewa, which has no land but depends on forest products for their livelihood, got 300,000 MMK in 2015, whereas each in Payit and Yegauk got 1,000,000 MMK in 2021 as damage. All cash payments were calculated based on the regional market rate, the willingness of affected people, and in combination with the methods of the previous similar UPH project shown in Table 2, in which the compensation payment for seasonal crops was not presented. However, in the resettlement areas, in-kind Compensation included only physical infrastructures such as housing plots, community buildings such as monasteries, temples, water tanks, sub-regional rural health centers, supporting a few cement bags for building materials, road networks, electricity services such as distribution lines, transformers, and electricity meters; excluding agricultural land compensation, and livelihood restoration services.

**Table 2.** Cash compensation of physical properties and livelihood lost in Maewa, Payit, and Yegauk Villages.

Items			Unit	Unit Price (MMK) (Maewa Village)	Unit Price (MMK) (Payit and Yegauk Villages)
<i>Types of Houses</i>					
Zinc roof	TW *	TF **	sq/ft	7000	15,000
Dani/Palm leave roof	TW *	TF **	sq/ft	6600	14,000
Dani/Palm leave roof	BMW ***	BMF ****	sq/ft	5200	13,000
<i>Farmland, Taungya, Upland/Alluvial land &amp; Garden land</i>					
Granted Farmland (land clearance + crop)			acc	1,000,000	1,000,000
Granted Taungya/Upland/Alluvial Land			acc	1,000,000	1,000,000
Granted Garden Land (Da Nyin Plant)			acc	350,000	350,000
Granted Garden Land (Pyngado)			acc	500,000	500,000
Garden Land in the protected forest			acc	200,000	200,000
<i>Perennial Plant</i>					
Coconut, Palm and Betel nut			plant	30,000	30,000
Mango, Jackfruit, jengkol, Tamarind, Sweet lemon, lemon			plant	10,000	10,000
Guava, papaya and other fruiting plant			plant	5000	5000
Support for each casual household			hh	300,000	1,000,000

Notes: Source: Author's Survey and interviews, TW \* = Timber wall, TF \*\* = Timber floor, BMW \*\*\* = Bamboo matt wall, BMF \*\*\*\* = Bamboo matt floor. 1 USD = 2060 MMK.

#### 2.4. Study Policy and Legal Instruments Applicable to Resettlement

Every citizen of Myanmar has a duty to assist the country in preserving and safeguarding its cultural heritage, protecting and conserving the natural environment and public property, and striving for human resource development [12]. Hence, when it comes to matters of relocation, resettlement, and compensation, the decisions and actions of rele-



vant government organizations hold considerable influence over the affected households, with the potential to bring about both positive and negative outcomes. Some Myanmar companies have already adopted the ISO 26000 standard for social responsibility as their fundamental obligation [13]. In order to promote sustainable development, socially responsible organizations strive to maximize their positive impact while minimizing negative impacts to the greatest extent possible. Resettlement is frequently recognized as the most challenging and contentious aspect of infrastructure development, production growth in the area, and addressing social, cultural, and environmental concerns. In response to this, international financial institutions and organizations develop and release policy frameworks, operational or performance standards, and guidelines. These resources serve as references for their clients, operational staff, consultants, and personnel from executing agencies in developing member countries who are engaged in the planning and management of resettlement within projects funded or developed by these organizations. Various international financial institutions and organizations have already published policy and legal standards that are highly relevant to environmental and social sustainability. These standards include the World Bank's safeguard policies, such as OP 4.12, Involuntary Resettlement [14], as well as its Environmental and Social Standards (ESS). Additionally, the IFC has established performance standards for social and environmental sustainability [15]. Other notable standards include the International Hydropower Association's (IHA) Hydropower Sustainability standard, the Asia Development Bank's (ADB) Handbook on Resettlement: A Guide to Good Practice [16], the United Nations Development Programme's (UNDP) Standard 5: Displacement and Resettlement [17], and the International Union for Conservation of Nature's (IUCN) Standard on Involuntary Resettlement and Access Restrictions (version 2.0) [18]. These standards have been published by the respective organizations to provide guidance and serve as benchmarks for addressing environmental and social considerations. Among these standards, the IFC performance standards have globally gained extensive recognition as widely accepted best practices in the realm of environmental and social sustainability. Other standards developed by international organizations and multilateral development banks share many of the same principles as the IFC performance standards [19,20]. Myanmar expressed a strong desire to catch up with the international community in the field of hydropower development because Myanmar's electricity sector was not involved in global efforts to improve hydropower standards and practices due to sanctions until a few decades ago. In September 2015, the IFC entered into an advisory services agreement with the Myanmar government to assist MOEE (Ministry of Electricity and Energy) and MONREC (Ministry of Natural Resources and Environmental Conservation) in addressing environmental and social risks associated with hydropower development [21]. The IFC provided technical guidance on topics such as EIA procedures (2015), environmental quality standards and risk management for hydropower, and stakeholder engagement [22]. The Myanmar government officials working in the hydropower sector were trained on the IFC's eight performance standards, including Performance Standard 5, which specifically addresses land acquisition, displacement, and resettlement. This standard provides guidelines on compensation, benefits for displaced persons, community engagement, grievance mechanisms, and planning for resettlement and restoration of livelihoods. Through their advisory agreement and consecutive training sessions, the IFC's performance standards have been widely embraced by stakeholders in Myanmar's hydropower sector. On the other hand, in March 2014, a memorandum of understanding was signed between MOEE (currently known as MOEP) and NVE (Norwegian Water Resources and Energy Directorate) to improve management of social and environmental impacts from hydropower projects developed by MOEE. Consequently, the Norwegian Agency for Development Cooperation (Norad) and NVE allocated 124 million NOK (USD 13 million) to MOEE for technical assistance through advisory services, coordination and management of consultants, institution development (including environmental and social sustainable policies and frameworks), and capacity building, including staff training and educational programs. The purpose of this funding was to

promote sustainable hydropower development and assist MOEE's hydropower projects in Myanmar in line with international environmental and social standards. The Norad provided the financing for this agreement between 2014 and 2019 [23,24] through technical assistance for environmental and social issues, including the Tha Htay pilot project [10]. These agreements were made during the implementation period of the THH project, which occurred after the resettlement of Maewa Village and before the relocation and resettlement of Payit and Yegauk Villages. The IHA gave a field visit to the THH project to meet all stakeholders in October 2016 and conducted an internal assessment process of the project as a pilot project by identifying significant gaps in the project for sustainable hydropower initiatives in Myanmar under the agreement between Norad (NVG) and IHA [21]. Then a follow-up workshop was held to improve hydropower sustainability in Myanmar based on the lessons learned from the assessment experience of the pilot project [25]. On the other hand, under the cooperation agreement with the Myanmar government, IFC offered advice and instruction on the Strategic Environmental Assessment workshop to enable the sustainable development of Myanmar's hydropower sector. This included aiding the government in creating environmental and social guidelines for hydropower development. When issuing the EIA procedures in 2015, in which all medium- and large-scale hydropower projects need to conduct the ESIA process and implement an environmental and social management plan (ESMP) [21,26], the THH project was already in the implementation phase, and Maewa Village had already undergone resettlement. However, the issuance of sector-specific environmental and social impact assessment (ESIA) guidelines for sustainable hydropower development in Myanmar is still pending. In order to conduct an environmental and social management plan as the legal requirement for the THH project, the NVG hired E Guard Environmental Services Co., Ltd. (E Guard) in 2018 as an independent third-party consultant firm to provide a report of updated environmental and social baseline information for the THH project, including mitigation measures for the project's impacts and a management plan [27]. Approximately two years after the event mentioned, the relocation and resettlement processes of Payit and Yegauk Villages occurred. During this time, the EIA experts and the project proponent seemed to follow the 2019 LARRL (land acquisition, resettlement, and rehabilitation law) for the resettlement process of the THH project. In addition to the survey of environmental impacts, they conducted a survey on social baseline information and held stakeholder meetings with affected communities, host communities, and relevant departmental organizations, respectively. For the projects that are not carried out by sole government investment, the internationally recognized standards, which are highly anticipated, are referred to for land acquisition, resettlement, and rehabilitation processes [28,29]. In Myanmar, the new 2019 LARRL [30] provides a legal framework for land acquisition, resettlement, and rehabilitation, aiming to establish a more transparent and inclusive process compared to previous practices. It is applicable to all land acquisition matters and provides provisions for compensation, damages, resettlement, and socioeconomic rehabilitation for public purposes. The primary objective of the law is to safeguard the interests of those affected by land acquisition, promote transparency and inclusivity, and prevent adverse social and environmental impacts.

## 2.5. Research Design

This study employed a convergent mixed-methods research method that involved gathering both quantitative and qualitative data. These data were analyzed separately, allowing for a comprehensive examination of the research problems or difficulties. By combining and comparing the results from both data types, a more comprehensive understanding of the topic was achieved. This approach aimed to generate greater insights and contribute to the overall research objectives. To address the first objective, a quantitative approach was employed using a survey-descriptive design. This design facilitated the examination of the basic characteristics of the responses obtained from the resettled people. Statistical descriptive statistics were utilized to summarize the collected data, whereas statistical analysis techniques were used to gather and analyze the collected closed-ended

survey data. The results were presented in terms of frequency, percentage, means, and standard deviations based on the statistical findings. For a qualitative approach, the researcher interviewed the participants, including some selected affected people, host people, and project officials, and discussed with them how to meet the second objective and generate more detailed ideas.

## *2.6. Target Population, Samples and Sampling*

Referring to the method adopted in the hydropower project and consideration of the actual conditions of the project, the statistical population of resettlement includes the resettled residents due to land acquisition for the THH project. Therefore, the target population of resettlement in the design year (2016) is 1591, including 39 households with 166 persons in Maewa Village, 153 households with 433 persons in Payit Village, and 308 households with 992 persons in Yegauk Village. For a sample survey, it involved selecting a small group of people from a larger population to obtain information that could be used to represent the whole population. Though surveys often relied on convenience sampling that did not accurately represent the population, resulting in unreliable data in the past [31], comprehensive probability samples were collected, and the principles of good sampling practices were well-established in this study to obtain statistically reliable data and ensure accurate results. By using the simple random sampling method, a sample size of 127 households, from a total of 500 households across three Villages, was selected to participate in the study. These households were chosen from the three resettled Villages as follows: 43 households from Payit Village, 76 households from Yegauk Village, and 8 households from Maewa Village. The researcher additionally selected 42 persons to interview and openly discussed with them; 30 resettled persons who already answered the designated quantitative research questions, 5 project engineers of resettlement, who have been participating in the implementation of the resettlement process in order to know their own judgment of the resettlement process, 7 villagers from host villages, namely Daw Mya, Kaung Kon, and Ya Hu.

## *2.7. Data Collection and Data Analysis*

After selecting appropriate samples and participants, data was gathered from various sources, such as in-person household questionnaires and interviews, observations, and developing a systematic approach for documenting and organizing the collected information. In terms of data collection methods, the study utilized both primary and secondary data. The primary respondents were the resettled people from three sites, namely Maewa, Payit, and Yegauk villages. As the primary method of data collection, the researcher collected some data through closed-ended questionnaires in three Villages. When collecting data in the resettlement areas, it was collected in the form of survey data. The survey questions and answers were first designed on paper, and the researcher went to Maewa, Payit, and Yegauk villages and did a field survey by asking them to answer the questions through the reading of the questionnaires. Then, it was collected in numerical form in the Quantitative approach as numerical data from the responses of resettled persons. During the data analysis phase, the researcher utilized SPSS software to test and analyze the collected data and describe its characteristics by frequencies, percentages, means, and standard deviations. These descriptive statistics provide the insights necessary to understand and interpret the findings. The primary focus of the analysis was on statistical data, as it aligned with the quantitative approach employed in this stage. In a qualitative research approach, the voluntary participants from the resettled Villages, host communities from Daw Mya, Kaung Kon, and Ya Hu Villages, and resettlement project officers in the THH project were interviewed and had an in-person discussion with open-ended questionnaires. As the qualitative data was crucial to accomplishing the research objectives, the collected data through interviews and discussions was also examined. In qualitative research, 42 face-to-face interviews were used to gather data and obtain detailed information involving audio recording. The study also incorporated formal and informal discussions and personal observations. The

researcher obtained secondary data from various sources, including the resettlement office of the hydropower construction unit. The collected data comprised information on the inventory of displaced households impacted by the project, environmental and social management data, reports on the Resettlement Action Plan and resettlement activities, and the socio-economic status of the affected population. Additionally, baseline data reports obtained from online open sources pertaining to the THH resettlement project were also included in the secondary data collection. In addition, the various worldwide research papers and well-recognized international policies, standards, and guidelines about resettlement and compensation issues in Hydropower development projects were reviewed. Subsequently, an examination of the guidelines encompassing the national land use policy, the environmental conservation law (2012), environmental impact assessment (EIA) procedures (2015), as well as the land acquisition, compensation, and resettlement and rehabilitation policy (2019) was conducted. This analysis was undertaken to obtain insights into the participants' feelings, experiences, and perspectives on resettlement practice and to fulfill the research objectives.

### 3. Results

#### 3.1. Background Information of the Respondents

The gender, education background, and occupation status of 127 participants from three Village locations were examined and analyzed (Table 3). The majority of female respondents participated more in the survey than male participants. A majority of the villagers' population has limited or no formal education, resulting in a focus on meeting their basic food needs. The next significant group of villagers had joined primary education. However, there was a qualified person who served as an assistant primary teacher at the post-primary education school in Yegauk Village prior to the resettlement. Regarding the Villager's occupations, the majority of them work as casual laborers and earn a daily wage. The casual laborers in the Villages are primarily unskilled workers, although some of them have traditional agricultural knowledge and practices from their original areas. It was found that their income-generating activities mainly depended on forest resources. The primary occupation for most households in Payit and Yegauk Villages was casual labor, including bamboo cutting, although some residents in Maewa Village worked as casual laborers at the Tha Htay dam construction site, earning daily wages. These jobs are typically available during the dry season and are characterized by seasonal work in the area. In Table 3, 18 people were engaged in rice and vegetable farming; some were engaged in their original areas, and a few were engaged in the areas that they had purchased themselves after displacement. Three respondents from Yegauk Village earned a living driving transport vehicle. Five respondents ran small grocery shops or businesses in the Villages; out of five, two were engaged in buying-selling forest products, while each respondent from Payit, Yegauk, and Maewa was running a small grocery shop. Each respondent from Payit and Yegauk was doing the logging. Women casual workers typically find job opportunities during the dry season, often engaging in activities such as gathering firewood. Most households in the affected villages have no agricultural land to grow crops and fruit trees. Nine respondents engaged in a little livestock raising, such as pig and chicken runs. In non-agricultural production, the researchers did not find any traditional production systems in the Villages except for one respondent waving bamboo hats in Yegauk Village.

**Table 3.** Socio-demographic profile of respondents.

Study Site	Number	Education Level and Number	Occupation and Number
Payit Village	43 (26 women, 17 men)	Illiterate ( $n = 23$ ; 15 Women; 8 Men) Primary Sch. ( $n = 13$ ; 6 Women; 7 Men) Middle Sch. ( $n = 5$ ; 1 Women; 4 Men) University level ( $n = 2$ ; 1 Women; 1 Men)	No job ( $n = 3$ ) Causal working ( $n = 25$ ) Cutting bamboo tree ( $n = 7$ ) paddy & vegetable farming ( $n = 2$ ) Animal husbandry ( $n = 2$ ) Logging ( $n = 1$ ) Small grocery shop ( $n = 1$ ) small business ( $n = 2$ )
Yegauk Village	76 (40 women, 36 men)	Illiterate ( $n = 46$ ; 29 Women; 17 Men) Primary Sch. ( $n = 24$ ; 9 Women; 15 Men) Middle Sch. ( $n = 3$ ; 1 Women; 2 Men) High Sch. ( $n = 2$ ; 1 Women; 1 Men) Graduate ( $n = 1$ ; 1 Men)	No job ( $n = 7$ ) Causal working ( $n = 27$ ) Cutting bamboo tree ( $n = 14$ ) paddy & vegetable farming ( $n = 16$ ) Animal husbandry ( $n = 4$ ) Driving transport vehicles ( $n = 3$ ) Vendor (vegetable selling) ( $n = 1$ ) Bamboo weaving (Bamboo hat) ( $n = 1$ ) Logging ( $n = 1$ ) Assist. primary Teacher ( $n = 1$ ) Small grocery shop ( $n = 1$ )
Maewa Village	8 (5 women, 3 men)	Illiterate ( $n = 3$ ; 1 Women; 2 Men) Primary Sch. ( $n = 5$ ; 4 Women; 1 Men)	Causal working ( $n = 4$ ) Animal husbandry ( $n = 3$ ) Small grocery shop ( $n = 1$ )

### 3.2. Quantitative Findings

In the study areas, the project proponent provided the fundamental physical infrastructure services such as housing, public infrastructure, roads, electricity, a water supply system, and so on. The study found that there was no different culture among the resettled people because the resettlement area was located in the same district. The family structure in Rakhine society was neither paternal nor maternal. Women were known to work harder than men and were usually responsible for both household chores and economic activities. Therefore, a larger number of women were involved in economic activities [32]. However, our study found that women did not participate in the decision-making process of resettlement because they were inherently content with their husbands engaging in all decision-making processes. Nevertheless, they became independent after displacement and resettlement. Based on survey questionnaires, the level of satisfaction among the respondents regarding fundamental infrastructure services, the selection of the resettlement area, compensation, public participation, and working conditions and opportunities was assessed in Table 4.

According to the study, out of the 127 respondents, approximately 53.5% (68 respondents) expressed satisfaction with their current resettlement area, which is situated alongside the Taungup–Thandwe road, approximately 3.2 km away from the Shwe Hlay Village Tract. They also considered the location to offer favorable opportunities for their children's education. Conversely, about 39.4% (50 respondents) were dissatisfied with the resettlement areas due to the absence of nearby agricultural land or pastureland for farming. A small percentage of respondents, around 3.9% (5 respondents), remained neutral, as they had no alternative but to relocate to the resettlement areas since residing alone in the old village was not feasible. In relation to the housing compensation provided, approximately 74% (94 respondents) expressed satisfaction with the compensation they received for building houses on their own. However, around 23.6% (30 respondents) from Payit and Yegauk were dissatisfied with the compensation, citing issues such as inadequate compensation amounts and difficulties in withdrawing the compensation from the local bank. Some respondents mentioned that the withdrawal process took more than six attempts, causing



inconvenience. It was worth noting that in 2021, Myanmar experienced severe political and COVID-19 pandemic crises. This situation further exacerbated the challenges faced by the resettled people, as there were difficulties with bank transfers and limitations due to budget constraints. Additionally, the rising commodity prices added to the financial burden for those who were independently building their houses. In terms of electricity services, approximately 74.8% (95 respondents) expressed satisfaction with access to electricity. However, 23.6% (30 respondents) from Payit and Yegauk Villages reported dissatisfaction with the electricity service. The main reason for their dissatisfaction was their inability to afford internal home wiring services and monthly electricity consumption payments, which resulted in a lack of access to electricity for basic household lighting. It is important to note that all respondents from Maewa Village reported satisfaction with their electricity access. Regarding the educational facilities and development, the majority of respondents (96.1% of 127 respondents) expressed satisfaction, with an additional 3.1% stating they were very satisfied. However, there was one respondent who mentioned that she could not afford to send her daughter to Shwe Hlay High School due to the annual tuition and transportation fees. Additionally, it was observed that some families from Payit Village neglected their children's education by taking them back to the original village for farming purposes.

**Table 4.** The level of satisfaction among the respondents regarding resettled area selection, fundamental infrastructure services, compensation, people's participation, and present working opportunities.

Questionnaires	Frequency (Percent%)				Mean	Std. Dev.
	Dissatisfied	Neither Dissatisfied nor Satisfied	Satisfied	Very Satisfied		
Resettled area selection	50 (39.4%)	5 (3.9%)	68 (53.5%)	4 (3.1%)	3.2	1.011
Housing compensation provided	30 (23.6%)	-	94 (74.0%)	3 (2.4%)	3.55	0.879
Electricity condition	30 (23.6%)	-	95 (74.8%)	2 (1.6%)	3.78	0.453
Educational facilities & development	1 (0.8%)	-	122 (96.1%)	4 (3.1%)	4.02	0.251
Better Health care condition	6 (4.7%)	1 (0.8%)	120 (94.5%)	-	3.9	0.433
Feeling socially secure	33 (26.0%)	-	92 (72.4%)	2 (1.6%)	3.5	0.899
People's participation	27 (21.3%)	2 (1.6%)	98 (77.2%)	-	3.56	0.823
Compensation rate allocation for all losses, except housing	22 (17.3%)	1 (0.8%)	102 (80.3%)	2 (1.6%)	3.66	0.779
Present working opportunities	62 (48.8%)	1 (0.8%)	64 (50.4%)	-	3.02	1.0

Note: Source: Author's Survey Data (2022).

Villagers were happy with the presence of sub-rural health centers in their resettled villages, despite some issues with the healthcare service. A majority of the respondents (94.5%) mentioned that they were in close proximity to the Shwe Hlay hospital and had access to clinics for their health concerns. Nevertheless, 4.7% (6 respondents) highlighted that the sub-rural health center in Maewa had been without healthcare personnel for seven years, and a similar situation existed in Payit and Yegauk for nearly two years since the completion of the sub-rural health centers. They also expressed concerns about the lack of job opportunities in the resettled areas, which made it difficult for them to improve their health conditions due to financial constraints. Then, respondents from Yegauk Village faced internal problems after the displacement and resettlement process. Two groups emerged, one consisting of 75 households and the other consisting of 233 households. The 75-household group was first relocated and resettled to a designed resettlement area, whereas the 233-household group demanded additional compensation of 10 million MMK before agreeing to move, resulting in significant tension between the two groups. Therefore,

respondents maintained good relationships within their respective resettled groups. In contrast, both Payit and Maewa Villages did not encounter such issues, except for one headman from Payit who was accused of showing favoritism towards the project proponent. Furthermore, the majority of respondents indicated that they had developed friendly relationships with their new neighbors and felt comfortable communicating with the host villager, except for one respondent from Payit, who felt uncomfortable due to her poor situation in the Village. In terms of social security, 72.4% (92 respondents) reported feeling socially secure in their resettled Village, while 26.0% (33 respondents) felt socially insecure, primarily due to concerns about theft incidents. The respondents occasionally participated in cultural festivals due to financial constraints, but they nearly always attended religious festivals. Regarding the involvement of the public in the resettlement process, 77.2% (98 respondents) expressed satisfaction, while 27 respondents (21.3%) were dissatisfied with the decision made by the Village leaders to choose the resettlement site without consulting them. Additionally, 2 respondents (1.6%) followed others' decisions without providing any comments. When it comes to the allocation of compensation rates for all losses excluding housing compensation, 102 respondents (80.3%) expressed satisfaction, and 2 respondents (1.6%) were very satisfied with the higher cash compensation compared to previous hydropower projects. However, 22 respondents (17.3%) expressed dissatisfaction as the project proponent only provided cash compensation for the loss of their property. One respondent (0.8%) followed the decision of others due to unanimous agreement among the community. The project proponent offered a one million MMK cash payment to each casual household in Payit and Yegauk or three hundred thousand MMK to each casual household in Maewa who relies on odd jobs for their livelihoods due to the land acquisition. However, this compensation amount was insufficient for the newly resettled households to sustain their long-term lives. Regarding the current working status and opportunities, the percentage of dissatisfied respondents was nearly the same as that of those satisfied with their current job conditions. 64 respondents (50.4%) were content with their current jobs, which involved activities such as farming, bamboo cutting, and trading in their original areas. However, 62 respondents (48.8%) expressed dissatisfaction with their jobs due to high commuting costs. The cost of commuting, amounting to 4500 MMK, included 2500 MMK from the resettled area to the hydropower dam site and an additional 2000 MMK from there to the original Villages. This commuting cost was considered unaffordable for many resettled people from Payit and Yegauk Villages, making it challenging for them to engage in activities such as rice and vegetable farming in their original Villages and the exploitation of forest products such as bamboo cutting and selling. Some households supplemented their income with non-timber forest products. Despite the completion of the hydropower project, the resettled people still hoped to earn income through bamboo cutting from the reservoir's upstream forest. The study also revealed that 52 respondents (41.0%) experienced a significant career change, and the career situations of 29 participants (22.8%) remained the same, while 46 respondents (36.2%) underwent only a minor change. This indicates that the majority of villagers had to switch jobs, with a significant number of women becoming solely dependent on their husbands. These women expressed dissatisfaction with their unemployment status after being displaced to a new location. They were left alone or with their children at home when their husbands returned to their original villages to earn money by cutting and selling bamboo.

The findings suggest that, overall, people were generally satisfied with the selection of the resettlement area, housing, and fundamental infrastructure services, although their responses varied for other indicators. Educational facilities and development received the highest average score of 4.02, indicating higher satisfaction. On the other hand, current job opportunities received the lowest average score of 3.02, indicating lower satisfaction. The results also show that respondents expressed higher satisfaction with electricity availability, health conditions, public participation, and compensation rate allocation. These factors received more consistent responses from the respondents.

### 3.3. Qualitative Findings

#### 3.3.1. Perspectives of Affected Communities

Before displacement and resettlement, the affected people were assured three things: (1) their sources of livelihood, e.g., agricultural land, would be replaced; (2) the new resettlement village had to have better infrastructure; and (3) they were provided with transportation vehicles during relocation time so that they could bring their movable assets and properties. Accordingly, the project proponent provided transportation vehicles for displaced households during relocation time. The fundamental infrastructure of the resettled Villages was better than in previous conditions. The roads in the resettlement areas were also deemed reliable throughout all seasons. A small percentage of respondents requested that their crushed rock streets be transformed into reinforced concrete. The availability of a water distribution system for daily household use was significantly improved compared to previous conditions in the area. None of the Villages has private groundwater wells. Purchasing drinking water is not necessary because the project proponent implemented a water pumping station, water supply tanks, and a piped supply system to deliver water to households. The resettled Villages now have piped water supply systems sourced from springs, ensuring good-quality water for domestic use during the rainy and winter seasons. However, all households in the three resettled sites faced challenges in accessing water during March and April before the rainy season due to the location of the sites, their elevation, the limited availability of water resources, and the reduced spring water flow during the summer. Furthermore, the Villager faced challenges in raising pigs as they were unable to provide daily feeding due to the high cost of pig feed.

*“We raise 2 heads of pigs and 3 heads of ducks for sale. In summer, water supply is insufficient to even the household uses. Because of it, it hardly to raise livestock here.”*

—woman (49, dependent, Yegauk).

The proximity of pig runs in the resettled housing system resulted in the distribution of odor to neighboring households, which was different from the original village conditions. Although the project areas had forested areas, the villages did not have any forest-based livelihood opportunities, except for collecting firewood from other people's belongings. The study identified the presence of two groups in Yegauk Village, one consisting of 75 households and the other consisting of 233 households, who experienced internal tensions after displacement and resettlement. A headman respondent (68 years old) from Yegauk Village said that they (the 75-household group) and all 153 households from Payit decided to first move to the resettlement area in the last week of March 2021 because they knew that the government had already rejected their request for 10 million MMK for their long-term livelihood restoration because the project proponent had given as much as all compensation for their losses, and additionally, they had promised to support housing compensation batch by batch when they had already relocated to the resettlement area and to continually submit the appraisal for new land acquisition of agricultural compensation. On the other hand, the other group, consisting of 233 households in Yegauk, of which many were casual households, expressed concerns about their livelihoods in the resettlement area. An old man (65 years old) from Yegauk Village said that they were apprehensive about receiving adequate agricultural land compensation, as they believed it would not be easily possible if they relocated to the new resettlement area. Therefore, they demanded an additional 10 million MMK for rehabilitation and long-term livelihood compensation before their relocation, despite initially selecting the resettlement site themselves and already receiving cash compensation for the land loss and the loss of other assets based on national policy. Unfortunately, their demands were not met, and they had to move to the resettled area in late April 2021, following the Thingyan water festival. This situation led to significant tension between the two groups.

During the tumultuous year of 2021, marked by a severe COVID-19 outbreak and political issues in Myanmar, some resettled people voiced their concerns regarding the limitations and deficits in bank transfers and the allocation of funds from the union govern-

ment budget to local banks. This was further compounded by rising commodity prices, which posed challenges for those who were independently constructing their houses. While there was overall satisfaction with the housing compensation provided to the resettled households, some complaints arose regarding the insufficient compensation for self-built houses and the difficulties in withdrawing compensation amounts from local banks. The cost of building their houses far exceeded the allocated housing compensation, forcing some to deplete their savings or even accumulate debt, pushing them towards the brink of poverty.

*“The housing compensation is not enough for us to build our new home because the price of timber and tin plate roofing is more expensive than before, after resettlement. Additionally, we all have to sell our saving properties in implementation of housing. In here, we don’t think we can save such amount any longer without income.”* —woman (dependent, 47 years, Payit).

The infrastructure in the resettled villages was an improvement compared to their original conditions, resulting in higher living standards for the villagers. However, the availability of replacement land for agricultural purposes remained uncertain during the time of the field survey. Maewa Village was waiting for 150 acres of replacement land, while Payit and Yegauk Villages were waiting for 450 acres collectively. The process of securing replacement land has been ongoing for 14 years in Maewa and nearly two years in Payit and Yegauk. Consequently, the resettled people had no agricultural land for agricultural activities such as rice farming and vegetable cultivation. Additionally, the absence of pastureland prevented them from considering livestock grazing. The lack of land compensation forced many resettled people into casual labor, where they had to engage in odd jobs. It was observed that approximately 10 households from Yegauk Village resorted to clearing forests and working on agricultural tasks in the nearby mountains. However, these mountains were not owned by the host villager but belonged to the Forest Department.

*“We know that we will give up these lands later because these mountains adjacent to our resettled Yegauk Village do not belong to us and the forest department owns all these, but we are struggling with our daily food, we have no choice, we need to solve our daily living. We cannot live for long run without having food.”* —man (38 years, casual worker, Yegauk).

During the field survey, it was discovered that due to the absence of compensation for agricultural land in the vicinity of the resettled villages, most resettled people, particularly Payit and Yegauk, had to return to their original villages located 32.1 km away from the resettlement site for farming and exploiting forest resources. However, they faced the burden of paying a transportation fare of 4500 MMK. The high cost of commuting became a source of frustration for most resettled people, as it was not financially feasible for them to engage in rice farming or the exploitation of forest products such as bamboo cutting and selling. Engaging in bamboo cutting and selling could generate a monthly income of up to 160,000 MMK (77.7 USD) per household. Consequently, bamboo cutting and selling became significant sources of income for many households. Additionally, non-timber forest products also contributed to the overall household income. Some resettled people experienced a significant change in their jobs or careers, especially because there was no agricultural compensation land. On the other hand, as men left their households to seek work in their original villages, such as bamboo cutting or farming, women stayed behind to care for their children. Consequently, many women became unemployed and relied solely on their husbands’ irregular employment. This dependence on their husbands resulted in difficulties in obtaining food and other daily necessities. The majority of women expressed dissatisfaction with their unemployment status after being displaced to the new resettlement location, as they became entirely dependent on their husbands.

*“My husband leaves us for 10 days since he goes to the original Village for bamboo cutting and selling. After 10 days, he comes back to us with some amount of money 80,000 MMK. Then we spend it for daily food and children educational expenditure. After staying for 5 days here, he again leaves for the forest of original Village. I really worry about my husband will happen something in his journey for earning money for us.”*—woman (32 years, dependent, Payit).

During the field survey, fear and anxiety were found among the old people and women moving to a new resettlement area because they were attached to their old villages and had become jobless. Therefore, it might be a potential problem that needs to be urgently solved for unemployed women. They could not earn a living with the husband’s casual work. The best way to minimize this problem would be by implementing a rehabilitation program, exploring land to be cultivated, or exploiting forest products. It was affirmed that cash compensation alone was not sufficient to cover all the losses of the affected Villages. Then, damages for the casual villager should have been provided based on the principle of “equal to or better than their previous livelihood situation”. In fact, most casual households have been struggling with their daily food, their children’s education, and their health expenses. The researcher asked the Villager what kind of assistance they would need from the project and what difficult situation they had been facing.

*“We need jobs or replacement land for rice farming or vegetable farming and other basic needs.”*—man (45, casual worker, Yegauk).

Young people preferred their current living conditions and lifestyles in the resettled Villages, indicating a preference to remain there rather than return to their previous circumstances. However, many older people were frustrated with the lack of jobs. Therefore, they yearned for the life of the old Villages. They said that they still dreamed of their lives in the original Villages. Thus, they disagreed that the resettled area would be a place where the economy would grow in the future without any current job opportunities.

*“We don’t think this place is possible to become an economic development area in the future because there are no job opportunities and most villagers are still casual workers.”*—man (58, household head, Payit).

### 3.3.2. Perspectives of Host Communities

Daw Mya village, one of the host villages, started getting access to electricity on 18 June 2022, after one and a half years of the resettlement of Payit and Yegauk Villages. During the construction period of the resettlement site, villagers from Daw Mya got daily paid work, mainly in the construction of road networks carried out by the project proponent. It was found that some resettled Villagers went to the area adjacent to Daw Mya to search for fish and Vegetables for their daily meals. The researchers interviewed two women and one man from Daw Mya to determine whether there were any effects on Daw Mya Village after resettlement.

*“Resettlement villages look like model villages but some people of Yegauk village have no land to do for living, and they have come to work on the mountain land where we are used to cutting trees and doing cultivation. At last, we have given up the land to them for cultivation. The land is not our own garden land but it belongs to the forest department.”*—women (44 years old, firewood seller, Daw Mya).

Kaung Kon Village is also one of the host villages. So, the lack of resettled people’s livelihoods pressured Kaung Kon Village. There is a Jin Chaung weir behind Yegauk Village that is used to supply domestic water to Auk Nat Maw, Kaung Kon, and Ohm Maw Villages. The villagers from those villages were not allowed to share any water from the Jin Chaung weir, and there were many objections to taking water from it for Payit and Yegauk Villages because host villager worried about the scarcity of water in the summer in case the water was shared with resettled villager. Therefore, the spring water way was an alternative one to supply domestic water for Payit and Yegauk Villages. The researcher started to



discuss with some villagers from Kaung Kon Village their views on the resettlement sites and the resettled people's living conditions.

*"I have accepted that the resettled people have broadened their views compared to the previous condition in their original villages. However, they have nothing to do around the resettled villages, which brings them several difficulties in making their living. I heard that even old men cried by facing and looking towards the side of original villages when they first came to the resettled villages. So, I conclude that at this rate, they have been suffering for a long time."* —man (28 years, mechanic, Kaung Kon).

The villagers from Yegauk and Payit went to the forests of the host village to collect firewood and search for forest products for their daily foods. A peasant woman (26 years old) from Kaung Kon Village said that pepper trees had been planted on the Jengkol trees on the mountain, and they were not allowed to collect firewood. She also mentioned in her hearing that although compensation had been given to those who had relocated there, there was, economically, not much to develop the resettled villages because there were no farms or rivers around the resettled villages for resettled people to do their living.

### 3.3.3. Perspectives of Project Proponents

In all tasks such as land acquisition for the project, compensation rate allocation, and resettlement site selection, the project proponent had made an agreement with the affected persons. The policy had changed after the issues of the 2015 EIA producers and the 2019 LARRL, as well as with some advice from NVG as technical assistance for social risk management due to the THH project. After that, as per agreement between the project proponent and the affected communities, despite providing cash compensation for all their losses, the project proponent submitted an agricultural land appraisal to the Forest Department in order to abandon land in the forests for resettled households to do their agricultural farming. A man engineer (47 years old) from the resettlement site expressed that there was no policy to buy farmland or agricultural land for resettled villages when the project was carried out by the government capital budget. In negotiations with the affected villagers, we had already compensated them in cash. After receiving the Norwegian Technical Assistance, we had to consider the land compensation with their advice as international practice. However, land acquisition for agricultural land compensation was in progress during the time of the researcher's field survey. Although the resettled Villagers did not receive land compensation for land-based livelihood loss, they still expected that they could earn by cutting bamboo from the forest of the reservoir upstream even after the completion of the hydropower project. However, another man engineer (46 years old) from the project site claimed that he did not think that they would be allowed to cross the reservoir and to live in their original areas after running the hydropower station because of its safety.

During the implementation stage of resettlement, the construction of the project required a substantial number of skilled and unskilled construction workers. It was an opportunity for the people of three resettled villages to earn cash income if they were employed. Some locals from Maewa village were seasonally working at the construction work of the powerhouse station and the dam, whereas some from Payit and Yegauk Villages were complaining that project officers had not employed them for any jobs. Therefore, an inquiry was made to some project officers about this issue. A sub-assistant officer (44 years old) from the project, who had experience with the construction work of resettlement, said that although the locals from Payit and Yegauk were not familiar with road construction and building some infrastructure facilities such as temples, schools, monasteries, and so on, he tried to appoint some resettled people to the road construction as daily wage labor, but they felt tired in work and then left their work after some days. He explained that it affected the implementation of the resettlement project over time. In reality, the project officials faced challenges in implementing the resettlement program due to the limited budget allocation and the constraints of the resettlement policy. They acknowledged the need to create sustainable job opportunities for the resettled communities as part of the livelihood

restoration efforts. The officials emphasized the limitations imposed by national policies regarding land acquisition, compensation, and the overall resettlement and rehabilitation process. A project official (43 years old) noted in his view that he knew the resettlement policy and guidelines needed to be more effective and sufficient. Following the project's completion, it was unlikely that the area upstream of the Dam would offer opportunities for fisheries and aquaculture. In addition, there were no industries located in or near the resettlement project areas. The project proponents stated that they did not anticipate tourism to thrive in the project area. It is worth noting that, to date, no dams in Myanmar have been accessible to tourists.

#### 4. Discussion

The affected villagers in general agreed to cooperate with the project proponents for the sake of the project despite their fear and reluctance to move from their original villages. Most of the Villagers worked odd jobs and had limited literacy, with a few being farmers. According to the findings, there were no more portions of cultural heritage, antique objects, or ancient monuments in the submerged area except monasteries. Considering social and cultural stress [33,34], the resettled people did not experience any significant changes in their cultural customs since they were relocated within the same district. Regarding public participation in the resettlement process [35,36], the resettled people from Payit and Yegauk actively participated in the site selection process for their resettlement, and the project proponent chose the site based on their preferences, which was then submitted to the regional government for approval. However, there were certain factors that influenced the site selection for the resettlement [37]. One of the challenges was the absence of agricultural land near the resettlement area. Additionally, there were difficulties in ensuring water supply during the summer months, specifically in April and May, as the site was situated at a higher elevation and relied on spring water sources. The researcher also highlighted that maintaining and operating the water supply system would be costly for the resettled Villager in the long term, as they would be responsible for its management.

On the other hand, the project proponent supported housing compensation for fundamentally designated houses, such as the practice of the previous state-owned UPH project [6], although the joint venture-based hydropower resettlement project provided houses for resettles' living [38,39]. Additionally, they provided monasteries, libraries, playgrounds, cemeteries, access to water, schools for education, sub-rural health centers for health services, road networks for transportation, and access to electricity. The resettled people are satisfied with basic infrastructure services. However, they highlighted that it could not have directly provided primary health care services to the resettled community because there were no health personnel in the sub-rural health centers. The lack of availability of healthcare services in the resettled villages has also increased the health risks faced by the resettled population. Therefore, the resettled people were largely dependent on a private clinic or public hospital in Shwe Hlay, 3.2 km away from the sites. The reason behind this is that the department of public health generally appoints two health personnel at the sub-rural health center only for villages with a population of at least 5000 people, except for very remote rural villages where 2000 people is sufficient. In these resettlement sites, as Payit and Yegauk had a population of only 1425, they were unable to receive health personnel for their sub-rural health center, and similarly, Maewa Village only had a population of 166 people.

On the one hand, the compensation practice for the Tha Htay HPP was higher than the original standard and previous state-owned projects. All cash payments were calculated based on the regional market rate and negotiations with the affected households. However, market rates were not adjusted for inflation. It resulted in exceeding the housing compensation standard (because of changes in the market price for buildings) and exceeding personal affordability. In addition, there was no such development fund included in the resettlement compensation reserved. Therefore, it was not only economically unreasonable

but also difficult to live. This lesson should be highly valued, and resettled people should be guided economically to adapt to social development and avoid extravagances.

According to Schmitt–Degenhardt, it was suggested that a minimum landholding of 3 acres was necessary to alleviate poverty through agriculture alone in Myanmar [40]. The resettled people encountered two primary challenges: acquiring new land for agricultural purposes and the absence of initiatives or strategies to restore their livelihoods. Furthermore, the IFC recommends that it is necessary for the project proponent to provide affected households with land-based compensation because land for land is the preferred compensation option where their livelihoods are land-based [15] and to help them with the improvement or restoration of their livelihoods [15,26]. There should have been three resettlement sites with suitable agricultural land. The main point was that the project proponent chose potential household plots, including public community plots, without suitable agricultural land adjacent. As observed during the field survey, the process of acquiring agricultural land for three resettled villages was ongoing. The project proponent and relevant stakeholder organizations should provide agricultural lands to the affected households so that they will not face an unsustainable livelihood in the long run after the resettlement project. In order to ensure the restoration of livelihoods for those affected by land acquisitions, it is essential to conduct rehabilitation measures, even if compensation and relocation have already taken place, as outlined in the National Land Use Policy [41]. This support should aim to restore their pre-project standards or even surpass them. Therefore, the project proponent needs to adhere to specific methods of promoting social stability and implementing livelihood restoration activities in accordance with national policies, resettlement management plans, and relevant international standards. It is also important to note that the project proponent has guidelines and technical assistance to facilitate the smooth implementation of the resettlement program, considering the limitations of existing national laws, policies, and frameworks. In this regard, they should have either constructed housing for the resettled people or assisted them in building their own houses in advance. Moreover, a case of benefit sharing [42,43] such as affected persons' investment in the project, has not been found in Myanmar hydropower resettlement practice. The findings highlight the identification of development opportunities within the resettlement program (Table 5), while also examining the gaps and challenges in the current practices of resettlement and compensation (Table 6), drawing on the feelings and perspectives of affected people, the experiences of project proponents, and the opinions of host Villagers involved in this research.

Finding problems based on the feedback information from the respondents, putting forward specific suggestions on the implementation of the resettlement process, and even the resettlement policies, can be sought in this paper so as to improve the resettlement practice and enrich the policies in the future for the sustainability and quality of resettled communities.

**Table 5.** Identifying development opportunities in the resettlement program.

Consideration and Factors	Themes	Annotation
Housing	Positive improvement	There is progress and improvement in housing infrastructures.
Community services	Positive improvement	There is improvement and progress in various aspects of community infrastructure and services such as Monasteries, Temples, schools, sub-rural health centers and internal road networks.
Transportation	Positive improvement	Transportation in the resettlement areas has been improved more than the original condition.
Electricity	Positive improvement	All resettled Villages have gained access to electricity. Furthermore, neighboring Villages have also been electrified as a direct consequence of these developments.

Table 5. Cont.

Consideration and Factors	Themes	Annotation
Education	Positive change	There are positive changes in the community's perception of education.
	Value of Education	The perception of education among people has shifted, as they recognize that their educational achievements cannot be diminished or taken away.
	Education Investment	Investing in children's education is considered a means to secure more financially stable employment opportunities for them in the future. Consequently, households allocate a significant portion of their expenses towards education, recognizing it as a form of investment with the potential for long-term benefits.
Local Development	Positive Development	The community acknowledges the development potential of their locality in contributing to regional progress.
	Community-based tourism	The hills surrounding the upstream area of the reservoir hold promising potential as a picturesque destination for community-based tourism, offering opportunities for recreational activities.
	Alternative livelihood	Promoting the production of bamboo-based traditional crafts such as bamboo baskets, bamboo hats, bamboo chopstick, and more should be actively encouraged. Additionally, by providing market-oriented technical assistance for cultivating alternative crops, the region can unlock significant development potential in this area.
Lessons of the resettlement practice	Good organizational structure	Effective coordination has been established between local authorities, local communities, and various committees and working groups responsible for supervision and management. These arrangements ensure a well-organized resettlement process.
	Lessons from experiences	Lessons can be learned from the resettlement activities, which have highlighted weaknesses in areas such as public participation, site selection for resettlement, timing of relocation, compensation practices, and livelihood restoration. Additionally, challenges in obtaining approval for acquiring new agricultural land have also been identified. These lessons emphasize the need to address these issues in order to enhance the effectiveness of the resettlement process and mitigate the difficulties faced by resettled communities. Reflecting on past experiences is crucial to finding ways to improve future resettlement practices.

Table 6. Identifying development gaps and challenges in the resettlement program.

Consideration and Factors	Themes	Annotation
Resettlement Site Selection	Unsatisfactory site	Despite the proximity of the resettlement sites to the Shwe Hlay Tract and Taungup-Thandwe Road, there is a lack of agricultural land in the vicinity for the resettled people to engage in farming activities. Similarly, there are no accessible forests that can provide them with livelihood opportunities. These resources are owned by other Villagers or government departments. Furthermore, after the resettlement, there will be additional expenses involved in providing water supplies to the households during the dry season due to the elevated nature of the sites.
Public contribution	Absence of unanimous agreement	Most households were provided with project-related information, but the affected Villages were given only one week's notice to relocate.
	Limited community engagement	The planning stage of resettlement did not involve the majority of households, as the headmen of the resettled Villages participated in site selection and compensation rate allocation.

Table 6. *Cont.*

Consideration and Factors	Themes	Annotation
Compensation	Failure to manage land compensation properly	The project proponent could not manage to fulfill their commitment to providing land-for-land compensation as they solely relied on cash compensation without considering alternative options for land loss.
Fund for resettlement	Inadequate budget	Prior to relocation, some households received 30% cash compensation for reconstructing their houses. The resettled people have to bear the burden of building their homes at costs that exceed the housing compensation provided to them. Furthermore, due to insufficient budget allocation, it was not feasible to provide full compensation at once.
Transitional support	Inadequate relocation assistance	The affected people dismantled their houses in the original Villages and independently reconstructed them in the new areas. However, the scarcity of skilled labor and carpenters, as well as the high costs associated with rebuilding, caused additional stress during their displacement. Although transportation assistance was provided, including vehicles for relocation and a few cement bags for construction, more transitional support was expected.
Timing of relocation	Timely inappropriate relocation	The relocation process commenced in late March and April, just before the onset of the rainy season. As a result, the majority of displaced people resided in temporary huts at the resettlement sites during the rainy season.
Livelihood restoration	Lack of livelihood restoration plan	The households were uncertain about how to sustain their livelihoods after losing their main assets. There was also uncertainty surrounding the restoration plan for their livelihoods.
	Lack of providing alternative income earning opportunities	The compensation for agricultural land was not completed, and there was also a lack of alternative income-generating opportunities for the resettled people.
Grievance Mechanism	Poor management in grievance mechanism	The majority of households addressed their concerns. However, those were not taken into consideration.
Resettlement Management Plan	Insufficient resettlement monitoring plan during implementation	Being a government-led project, only the project proponent is responsible for reporting the progress and completion of the implementation. However, it is crucial to adhere closely to the planned requirements in order to maintain quality and progress. It is also important to independently report the situation, ensuring accurate information regarding the resettlement implementation is shared.
	Lack of post-project monitoring plan	Once the report of resettlement completion is submitted and the resettlement area has been handed over to the local government, the project proponent no longer allocates budget for a post-project monitoring program to assess the living conditions of the resettled communities.

## 5. Conclusions

The resettlement and compensation practices of the THH project involve the establishment of three entirely new villages. Therefore, it is not a mere replication of the original villages but rather an opportunity for the development of both the hydropower project and the resettlement area, serving as a foundation for regional development. If the resettlement and compensation practices are in line with Myanmar's inadequate policies on land acquisition, resettlement, and rehabilitation, they could result in conflicts between the developers and the resettled communities. Based on our findings, the policy relies on cash compensation to address the losses incurred by displaced people. Therefore, this approach has several shortcomings. Instead, it is important to carefully consider appropriate compensation mechanisms that include both cash and in-kind compensation, such as providing agricultural land to those whose livelihoods are land-based and other forms of livelihood support to all displaced people, so as to make their lives reach and gradually exceed the original level as soon as possible, enhance social development in the resettled communities, and promote the integration of their community with the local economy. Last but not least, all stakeholders, including the project proponent, policy makers, regional state authorities,



and the national government, need to actively engage in such activities according to the foreign technical advisory assistance for resettlement and sustainable livelihoods.

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