Impacts of collective relocation due to hydropower development on local people's livelihoods: A Case of Upper Paunglaung Hydropower Project in the Shan State of Myanmar

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1. Introduction

National infrastructure developments for electrification are essential in developing countries. For example, only 30% of the population could be accessible to electricity in Myanmar as of 2015 (Aung TS.et al.2021). Therefore, the Myanmar government is setting up achieving 100% electricity self-sufficiency by 2030 (ADB 2015). Hydroelectricity is the world's largest renewable source (International Hydropower Association 2020). It occupied 63% of the National Electricity in 2015 in Myanmar (M. Saw &L. J-Qing 2019). As of 2018, 29 hydropower plants were operating stage; six were under construction, and 51 were under the planning stage (Aung TS.et al.2021). The construction of hydropower plants is regarded as an essential means to realize the governmental goal. However, its developments often force local people to relocate to new places and change their livelihoods. The objectives of this study are (1) to investigate changes in the livelihood activities before and after resettlement and (2) to clarify responses of local people to the resettlement impacts.

2. Methodology

I selected a case of the Upper Paunglaung Hydropower Project (UPHP) in the Pinlaung Township, Taunggyi District, Southern Shan State, Myanmar. The government commenced the UPHP feasibility study in 2005 (Spectrum SDKN 2017) and officially completed it in 2015(www.mmtimes.com, 11 Dec 2015). Because of the UPHP, 23 villages were relocated in 2013 (Cornish, 2018). Of the 23 villages, I selected Tha Pyay Kone village for the data collection.

Because of the COVID-19 pandemic and the military coup, I conducted a field survey indirectly by hiring local researchers with knowledge of forestry sciences. Firstly, we conducted a pilot observation in December 2020. Subsequently, I finalized the questionnaire based on the findings of the pilot study. Using an online conference system, I thoroughly explained the contents of the questionnaire to the researcher before the start of the field survey. I maintained frequent communication with them during the survey. We conducted key informant interviews with officials from the local Administrative Office and Forest Department in April 2021. We also did a semi-structured interview with 63 household heads and members who are more than 25 years old at the interview date. Simultaneously, we organized focus group discussions in the village. After the field survey by the local researchers, I did telephone interviews with some of the key informers and respondents to improve the quality of data.

3. Results

Most of the respondents had agricultural land before the relocation. They cultivated rice (84%), turmeric (78%), groundnut (65%), chill (10%), and sesame (2%). Rice and peanut production were sufficient for their consumption before resettlement. As a relocation compensation package, the government distributed local people with new farmlands and money. However, most compensated lands were not suitable for agriculture, such as steep sloping and rocky areas. Thus, they lost permanent good fertile farmlands for rice and peanut cultivation. As a result, they came to rely more on both existing compensated land and not allocated forest land for swidden agriculture. They were cultivating turmeric (87%), *Taungya* paddy (51%), chill (14%), and banana (6%) for both self-consumption and cash purposes.

Before the resettlement, 59% of the respondents owned large domestic animals (e.g., buffalo and oxen), which were their main workforce in agriculture. In addition, those became income by selling them. However, they had to sell them out because there were not adequate pasture areas in the new relocated area. Due to those reasons, their

average income was also negatively impacted by the resettlement.

The percentage of households who commercially collect NTFPs (e.g., bamboo shoot, elephant foot yam, and broom grass) as seasonal livelihood activities sharply increased after resettlement. Besides, more than half of the respondents were selling their labor partially in the other's farms as extra income generation activities or short-term solutions for their food demands.

The local basic food production is impacted by losing permanent farmlands. Nearly half of the respondents reported they faced a food insecurity problem in some months of the year after resettlement. They tried to solve this issue just for short terms, such as borrowing money with some interest rate, selling and pawning household physical assets (i.e., motorbike, home plots), selling labor and agricultural products in advance before harvesting, and more relying on NTFPs.

4. Discussion

The previous livelihood strategies have deformed after resettlement. The involuntary resettlement forced the household to change their jobs (Sunardi et al. 2013). The local people mainly did farming (both agriculture and livestock raising) as a livelihood strategy before resettlement. However, this strategy was changed after resettlement due to the inadequate land and pasture limitation. They could not cultivate main staple crops in the new location. It can cause serious food security problems and poverty reduction (Yankson PWK et al. Rev 2018). Most respondents reported that they faced land scarcity. They were trying to solve this issue by shifting cultivation, but they could not meet the household subsistence food requirement. The land availability for shifting cultivation is also a consequential problem.

The government compensated the village with infrastructure for religious buildings, schools and village clinics, and electricity. Although there are also some improvements in the house condition after resettlement, the local people's livelihood outcomes are much lower than the before resettlement situations.

5. Conclusion

Almost all the respondents prefer the previous livelihood activities before resettlement to the current ones because they lost important assets (good fertile permanent farmland, livestock, and pasture lands, etc.). Along with the loss of these assets, the household livelihood activities have been changed. For example, the lowland rice and groundnut cultivation and livestock raising had changed entirely. Meanwhile, new livelihood activities were emerged, such as NTFPs collection and their trade.

The farmland scarcity, household income, and food insecurity impacted their livelihoods. It has caused the emergence of new farmland in the Reserved Forest. Laboring and exploiting NTFPs are also their main activities to respond to the resettled impacts. Some households respond to the immediate food requirements by selling and pawning household assets (e.g., motorbike, home plots), borrowing money with interest rates, and selling crops in advance of harvesting at a meager price. Thus, the revison of compensation package distributed is a vital action to be taken by the government to minimize the resettlement impacts. In addition, the practice of community forestry programme through agroforestry system is also recommended in the mountainous landscape instead of traditional shifting cultivation currently practiced by the local people.

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