



Assessing the Perceived Economic Consequences of the Tuirial Hydro Electric Project on Surrounding Rural Communities in Mizoram

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Abstract

The Tuirial Hydro Electric Project (THEP), located in the Kolasib district of Mizoram, is a major infrastructure initiative aimed at meeting energy needs while promoting local development. This study investigates the economic impact of THEP on the surrounding communities. Data collected from residents reveals mixed perceptions regarding the project's benefits. While some respondents noted improvements in infrastructure and job creation, a significant portion reported that their economic conditions remained unchanged or worsened due to the project. Notably, 83.9% of respondents did not receive compensation for land lost to the project, highlighting a gap in benefit distribution. Additionally, the reduction in land available for shifting cultivation was a concern for many. The findings suggest that while THEP has had some positive effects, particularly in job creation and infrastructure, the economic benefits have not been widely felt, and the negative impacts, especially on agriculture and compensation, remain significant challenges.

Keywords: Tuirial Hydro Electric Project, economic impact, rural development, compensation, agricultural land use, local communities, Mizoram.

Introduction

The Tuirial Hydro Electric Project (THEP) is a significant infrastructure initiative located in the Kolasib district of Mizoram, with the primary aim of contributing to the nation's energy needs while fostering local development. However, like many large-scale development projects, the socio-economic impact on the surrounding communities is complex and multifaceted. This study investigates the perceptions of residents in the villages near THEP, particularly focusing on its economic implications. Understanding the local community's experience is essential in assessing whether the intended benefits of such a project are being realized or if unintended negative consequences are emerging.

The primary objective of this research is to analyze how THEP has influenced the economic conditions, livelihood, and overall well-being of those living in proximity to the project. This study explores various dimensions such as changes in family income, agricultural land use, compensation received for land losses, and shifts in employment

and occupation patterns due to the hydroelectric project. Through this, it aims to provide insights into how infrastructure projects like THEP can impact rural communities, both positively and negatively.

Economic impacts were evaluated by examining changes in income, occupation, and access to compensation. A significant portion of the respondents reported that THEP had not meaningfully altered their financial conditions, with only a small number indicating improvements. Additionally, the reduction of land available for traditional agricultural activities, particularly shifting cultivation, was noted by some respondents, though the majority felt the impact on land use was minimal. In terms of compensation, a large majority of respondents reported not receiving any, pointing to a significant gap in the distribution of benefits from the project.

This study, therefore, provides a comprehensive view of the lived experiences of the local population, exploring the balance between the perceived benefits and challenges posed by the Tuirial Hydro Electric Project.

Literature Review

Hydropower projects are widely regarded for their potential to stimulate regional economic development, but their socio-economic impacts are complex and multifaceted. Several studies have explored both positive and negative economic outcomes of such projects.

One of the main benefits highlighted by many researchers is job creation. According to WCD (2000), large-scale hydropower projects provide significant employment opportunities during construction and operation phases, contributing to local economies. Similarly, Sener et al. (2019) found that hydropower projects have created numerous jobs in rural areas, particularly for construction workers and service providers. However, these benefits are often short-term and do not always extend to long-term economic stability for local communities (Sener et al., 2019).

In addition to employment, hydropower projects have been linked to improved infrastructure. Fedorov et al. (2017) argued that these projects can lead to the development of roads, schools, and healthcare facilities, which can enhance the overall quality of life in rural areas. However, the economic benefits of such infrastructure improvements are not always equitably distributed among local populations (Ghosh & Chattopadhyay, 2014).

Despite these benefits, many studies highlight significant negative impacts on agriculture and traditional livelihoods. For instance, Zhang et al. (2018) noted that the construction of hydropower plants often leads to the loss of arable land, adversely affecting local farming communities. Moreover, Bhandari et al. (2019) pointed out that the displacement of people due to hydropower development often leads to long-term economic instability and social disruption.

Kumar and Kumar (2020) emphasize that the economic impact is often uneven, with wealthier regions benefiting from greater energy access and compensation programs, while poorer areas continue to face challenges. Furthermore, Paredes et al. (2021) highlighted that the long-term economic benefits of hydropower are often compromised by environmental degradation, which can diminish the local economy's resilience.

While hydropower projects offer economic opportunities, their benefits need to be carefully balanced with sustainable development practices to ensure that they contribute to long-term community well-being.

Methodology

This study employs both primary and secondary data collection methods. Primary data were gathered using a structured household-level questionnaire, complemented by Focus Group Discussions (FGDs) with representatives from the North Eastern Electric Power Corporation (NEEPCO), prominent individuals from the local villages, and members of the Village Council. Secondary data were obtained from various published and unpublished sources, including official documents from the relevant departments, the Statistical Hand Book of Mizoram, books, journals, and other reference materials available on various websites.

For the sampling process, a combination of purposive, quota, and systematic random sampling techniques was employed. Initially, five villages in close proximity to the Tuirial Hydro Electric Project (THEP) namely Saipum, Saiphai, Hlimen, Bukpui, and Thinghelh were purposively selected. A quota was assigned to each village based on the number of households present, and respondents were subsequently chosen through random sampling within these designated villages.

The sample size for the study was determined using Slovin's formula. Although the required sample size was calculated to be approximately 371, an initial sample of 380 was collected to mitigate potential sampling errors and biases. Following data collection, some responses were deemed inconsistent or insufficient and were excluded, resulting in a final sample size of 224 respondents.

The collected data were analyzed using descriptive statistical methods, including the computation of mean values, frequency distributions, and percentages. Inferences were drawn based on the analysis of these statistical measures.

Results and Discussions

The respondents were asked whether the Tuirial Hydro Electric Project (THEP) has influenced the economic condition of their families. The results are shown below.

Table 10: Perceived Impact of THEP on Economic Condition

Responses	Frequency	Percent
No	192	85.7
Yes	32	14.3
Total	224	100.0

Source: Primary Data, 2025

The survey results regarding the perceived impact of the Tuirial Hydro Electric Project (THEP) on the economic condition of respondents' families reveal that the majority of respondents, 85.7%, believe that the project has not brought any significant changes to their economic status. In contrast, only 14.3% of respondents feel that the project has positively affected their economic condition. This suggests that, despite the presence of the hydroelectric project in the area, its socio-economic benefits may not be widely perceived or felt by the majority of the local population.

To further investigate, the respondents were inquired about the ways in which the Tuirial Hydro Electric Project (THEP) has impacted the economic condition of their families. The responses to this question reveal a range of perceptions, which are shown below.

Table 11: Perceived Changes Brought by THEP

Responses	Frequency	Percent
Remains the same	144	64.3
Better Economic standing	11	4.9
Worsened their economic situation	69	30.8
Total	224	100.0

Source: Primary Data, 2025

A majority, 64.3%, feel that their economic condition has remained unchanged due to the project. In contrast, 30.8% of respondents believe that the project has worsened their economic situation. Only a small fraction, 4.9%, report an

improvement in their economic standing as a result of the project. This indicates that, while the majority of respondents perceive no significant change, there is a notable portion who feel negatively impacted by THEP's construction. This highlights potential concerns about the socio-economic effects of the hydroelectric project on the local population.

Table 12: Perceived Impact of THEP on Agriculture Land

Responses	Frequency	Percent
No	189	84.4
Yes	35	15.6
Total	224	100.0

Source: Primary Data, 2025

The responses to the question regarding the impact of the construction of the Tuirial Hydro Electric Project (THEP) and its approach road on the area of shifting cultivation in the village indicate that the majority, 84.4%, believe that the project has not reduced the area dedicated to shifting cultivation. However, 15.6% of respondents feel that the construction has led to a reduction in the area of shifting cultivation in the village. This suggests that while the majority perceive no significant change in land use practices, there is still a portion of the population who believe the project has had an impact on agricultural activities. Further analysis indicates that the Tuirial Hydro Electric Project (THEP) has resulted in a reduction of the average area dedicated to shifting cultivation by 2.46 hectares.

Table 13: Beneficiary of Compensation

Responses	Frequency	Percent
No Response	20	8.9
Received	16	7.1
Not Received	188	83.9
Total	224	100.0

Source: Primary Data, 2025

The responses to the question regarding compensation for the establishment of the Tuirial Hydro Electric Project (THEP) reveal that a substantial majority, 83.9%, of respondents have not received any compensation. A small proportion, 7.1%, have reported receiving compensation, while 8.9% did not provide a response. This indicates a significant gap in compensation distribution among the local population, with the majority not benefiting from any compensation related to the establishment of the project. In addition, the finding reveals that the average compensation amount received by the 7.1% of respondents who reported receiving compensation is calculated to be ₹32,875. Further investigation was conducted among those who received compensation, inquiring whether the amount provided was commensurate with the value of the agricultural land lost due to the establishment of the Tuirial Hydro Electric Project (THEP). The responses indicate that 56.25% of respondents felt that the compensation did not adequately cover the value of the land they lost. In contrast, the remaining 43.75% of respondents reported that the compensation they received was equivalent to the value of their agricultural land lost.

Table 14: Perceived Impact or Relevance of THEP on Family Income

Response	Frequency	Percent
Yes	13	5.8
No	211	94.2
Total	224	100.0

Source: Primary Data, 2025

The table presents the responses regarding the relationship between family income and the Tuirial Hydro Electric Project (THEP). A vast majority of respondents (94.2%) believe there is no relationship between their family income and THEP, while only 5.8% of respondents think there is a connection. This finding suggests that the perceived impact or relevance of THEP on family income is minimal for most individuals in the sample.

The respondents were inquired about their perception of whether the Tuirial Hydro Electric Project (THEP) has impacted their family income. The responses are presented in the table below.

Table 15: Perceived Impact of THEP on Family Income

Responses	Frequency	Percent
Yes	15	6.7
No	163	72.8
More burdensome	6	2.7
No idea	40	17.9
Total	224	100.0

Source: Primary Data, 2025

The table examines the impact of the Tuirial Hydro Electric Project (THEP) on respondents' income. A significant majority of respondents (72.8%) indicate that the project does not impact their income. Additionally, 17.9% of respondents are unsure about the impact, selecting "No idea." Only 6.7% believe that THEP does impact their income, and a small proportion (2.7%) feel that the project has made their financial situation more burdensome. Therefore, we can conclude that the majority of individuals either perceive no effect or are uncertain about the project's influence on their income.

Again, the respondents were once again asked whether there is a relationship between the Tuirial Hydro Electric Project (THEP) and their occupation. The results are shown below.

Table 16: Perceived Connection of THEP and Occupation

Responses	Frequency	Percent
No	214	95.5
Yes	10	4.5
Total	224	100.0

Source: Primary Data, 2025

The table 10 shows the responses regarding the relationship between respondents' occupation and the Tuirial Hydro Electric Project (THEP). A large majority of respondents (95.5%) report that there is no relationship between their occupation and THEP, while only 4.5% of respondents believe there is a connection. We can conclude that the majority perceive no significant impact of THEP on their occupation.

To investigate further, the respondents were asked whether the Tuirial Hydro Electric Project (THEP) has had a positive impact on their occupation. The results are presented below.

Table 17: Perceived Positive Impact of THEP on Occupation

Responses	Frequency	Percent
No	210	93.8
Yes	14	6.3
Total	224	100.0

Source: Primary Data, 2025

The table 11 presents respondents' views on whether the Tuirial Hydro Electric Project (THEP) has positively impacted their occupation. A vast majority of respondents (93.8%) believe that THEP has not had a positive impact on their occupation, while only 6.3% of respondents feel that the project has had a beneficial effect on their work. Thus, we can infer that the perceived positive impact of THEP on occupation is minimal.

The respondents were once again asked about their perceptions regarding the negative impact of the Tuirial Hydro Electric Project (THEP) on their occupation. The results are presented below.

The table 12 presents the respondents' attitudes on whether the Tuirial Hydro Electric Project (THEP) has a negative impact on their occupation. A significant majority of respondents (96.9%) reported that the project has not negatively impacted their occupation, while only 3.1% indicated that it has had a negative effect. We can say that the negative impact of THEP on occupations is minimal, with the overwhelming majority perceiving no adverse effects.

Table 17: Perceived Negative Impact of THEP on Occupation

Responses	Frequency	Percent
No	217	96.9
Yes	7	3.1
Total	224	100.0

Source: Primary Data, 2025

To further assess the impact of the Tuirial Hydro Electric Project (THEP) on the occupations of the surrounding population, it was found that the project has resulted in both positive and negative outcomes for the local community. Among the negative effects, the most commonly mentioned issue is the loss of land, which has had a significant impact on certain respondents. The reduction in available land for the cultivation of crops, including broom and other agricultural products, has led to a decrease in production. Additionally, some land has been submerged due to

the construction of THEP, further exacerbating the challenges faced by local farmers. The displacement or reduction of land holdings has led to economic and social challenges for those directly impacted. However, several respondents also highlighted the positive effects of the project, particularly in terms of improved infrastructure and economic opportunities.

One of the key benefits mentioned was the enhancement of road connectivity, which has facilitated the transportation and sale of local products. For example, respondents involved in the production of brooms noted that better roads have allowed them to access larger markets, thereby expanding their customer base and increasing sales. Additionally, the improved infrastructure has made it possible for some individuals to establish small businesses, such as petty shops, in previously underserved areas.

Another significant positive impact of THEP is the creation of employment opportunities during the construction phase and beyond. Several respondents reported being able to secure jobs related to the development of the project, which provided them with much-needed income. Furthermore, some individuals have found new livelihood opportunities in sectors such as fishing, where the construction of the project has provided access to new fishing areas, enabling them to sell their catch in the market. These activities have contributed to the economic well-being of the local community, demonstrating the multifaceted effects of the project.

The respondents were inquired about their perceptions concerning the new roads constructed in their villages as a result of the Tuirial Hydro Electric Project (THEP). The results are presented below.

Table 18: Attitudes Towards Construction of New Road

Responses	Frequency	Percent
No	154	68.8
Yes	70	31.3
Total	224	100.0

Source: Primary Data, 2025

It could be seen from the table that the majority (154, or 68.8%) reported that no new road was constructed, while 70 respondents (31.3%) indicated that new roads had indeed been constructed in their village due to THEP. This suggests that a significant portion of the surveyed population did not experience any infrastructure development, while a smaller but notable group reported improvements likely linked to the project. The findings imply varying levels of impact from the initiative, with a greater proportion of villages unaffected by new road construction.

Again, the respondents were asked about their perceptions concerning their experience improved road conditions due to the Tuirial Hydro Electric Project (THEP). The results are shown below.

Table 19: Attitudes Towards Improved Road Conditions

Responses	Frequency	Percent
Yes	122	54.5
No	102	45.5
Total	224	100.0

Source: Primary Data, 2025

It could be observed that 54.5% of respondents affirmed that they experience improved road conditions, while 102 (45.5%) stated that they do not. This indicates that a slight majority of respondents perceive an enhancement in road conditions due to the Tuirial Hydro Electric Project (THEP), though a significant portion of individuals feel that their road conditions have not improved.

The respondents were again inquired about their perceptions regarding the negative impact of the Tuirial Hydro Electric Project (THEP) on transportation. The results are presented below.

Table 20: Attitudes About negative impact of THEP on transportation

Responses	Frequency	Percent
Yes	106	47.3
No	118	52.7
Total	224	100.0

Source: Primary Data, 2025

It was found that 47.3% reported that they believe there has been a negative impact, while 52.7% disagreed, stating that no negative effects were observed. This indicates that a slightly higher proportion of respondents do not perceive any adverse consequences on transportation due to the Tuirial Hydro Electric Project (THEP), although nearly half of the respondents acknowledge some negative impact.

The respondents were inquired about their perceptions regarding chronic diseases among family members. The results are presented below.

Table 21: Perception About Chronic Diseases in Family Member

Responses	Frequency	Percent
Yes	27	12.1
No	197	87.9
Total	224	100.0

Source: Primary Data, 2025

The table shows that 12.1% reported having a family member with a chronic disease, while 87.9% stated that no member of their family suffers from such a condition. This suggests that the majority of respondents do not have family members with chronic diseases, while a small proportion indicated the presence of chronic health conditions within their households.

The respondents were again asked about their perceptions regarding whether they face difficulties in treating chronic diseases. The results are presented below.

Table 22: Perception About Difficulties in Treating Chronic Diseases

Responses	Frequency	Percent
No	207	92.4
Yes	17	7.6
Total	224	100.0

Source: Primary Data, 2025

As shown in the table, a vast majority of 207 (92.4%) reported that they do not face difficulties in treating chronic diseases. In contrast, 17 respondents (7.6%) indicated that they do encounter challenges when treating such conditions. This suggests that most respondents do not experience significant treatment-related issues, while a smaller portion faces difficulties in managing chronic diseases.

Conclusion

The Tuirial Hydro Electric Project (THEP) has generated a mix of perceived benefits and challenges for the surrounding communities, as highlighted by the findings of this study. While the project has contributed to some infrastructure improvements, including road construction and enhanced market access for certain local products, the majority of respondents did not perceive significant positive changes in their economic conditions. A substantial portion of the population reported that their economic status remained unchanged, with a significant number expressing concerns over worsened financial situations due to the project.

One of the more pressing issues identified by respondents was the reduction in agricultural land, especially for shifting cultivation. Although a majority did not feel a significant impact, there was a notable portion who experienced a decrease in the area of arable land. Furthermore, compensation for the land lost to THEP was largely inadequate, with the majority of respondents reporting that they did not receive any compensation. This points to a significant gap in the distribution of benefits from the project.

Despite the challenges, some positive outcomes were observed, such as job creation, particularly during the construction phase, and new livelihood opportunities in sectors like fishing. However, these benefits were not widespread, and many residents did not experience any lasting economic or social improvements. While the Tuirial Hydro Electric Project has provided some benefits to the local population, its socio-economic impact has been uneven, highlighting the need for better distribution of benefits and more effective mitigation of the negative effects on local communities.

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