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Affecters of Dasu Hydropower Project and Issues of their Resettlement: Analyzing the Livelihood Related Problems

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ABSTRACT

The DHPP is the country's third largest dam now under construction. It has many energy benefits, although its construction has displaced almost 3,000 households, wherein affected communities are comprised of farmers, urban dwellers, and fishermen. Therein, this study will delve into the socio-economic impacts of DHPP on such displaced communities focusing on the issues they are facing in the resettlement process concerning the livelihood loss aspects. It studies the strategies affected households have used to rebuild their lives and assesses the effectiveness of resettlement policies and government actions. By identifying weaknesses in compensation systems, access to social services, and opportunities for livelihood diversification, the research throws light on the factors that affect the socio-economic well-being of those who have been resettled. The findings are an indication that displacement has led to the loss of income, curbed access to natural resources, and increased vulnerability to the affected groups. Even with the support the government is showing towards resettlement, there remain many households still struggling to become stable and attain their pre-displacement lifestyle. The conclusion of this research points to an urgent call for sustainable resettlement strategies and reforms in policy, which are in place to help face the long-term issues affecting the displaced population. It contributes to an expanding literature of development-induced displacement and offers useful recommendations for policymakers, project developers, and advocacy groups. The inferences are critical for planning any future infrastructure developments and resettlements that are highlighted with the notion of socio-economic resilience among communities affected..

INTRODUCTION

For ages, large-scale infrastructure ventures in terms of hydropower projects were considered indispensable for a nation's development (Raghuram et al., 2000). Indeed, these ventures have assumed central importance in stimulating growth processes and ensuring energy security to be combined with technological advancement in its wake (Rementeria, 2022). However, all these projects carry out strong socio-economic impacts, most importantly, displacement-resettlement, and alter or even completely destroying one's sources of livelihood (Esteves et al., 2024; Sikka, 2020; Terminski, 2013). It would be an apt expression, using the example of DHPP over Kohistan in the countryside of Pakistan.

The construction of large dams adversely affects both the community and the environment. Such construction activities impoverished newly settled communities and have been negatively impacting millions of people downstream (Baird et al., 2021; Yankson et al., 2018; Koirala, Hill, & Morgan, 2017). In Pakistan, since the 1960s, a number of large dams have been constructed. During the period from 2020 to 2030, the government of Pakistan aims to construct or develop new dams to generate energy (Khanum, 2019). The Dasu Hydropower Project, on which construction is currently undergoing, will likely become the third-largest dam in Pakistan once it gets completed by 2025. According to government claims, the Dasu hydropower is a vital source of renewable energy that will help fulfill the rapidly increasing energy demands of the country (Hussain et al., 2019). Yet this dam is said to cause some severe negative impacts on social and environmental levels-the displacement of 3,000 households, including subsistence farmers, urban residents, and fishermen.

The DHPP needed to acquire massive areas of land to develop reservoirs and associated structures, thus resulting in the removal of people, small traders, and farmers. Resettlement has interfered with existing social and economic patterns, and such issues have raised crucial questions about the effectiveness of resettlement policies and whether adequate compensation is provided to the people affected (Van der Ploeg, & Vanclay, 2017). Furthermore, Frembgen (2022) states that due to community dislocation, the socio-economic landscape in rural Kohistan has dramatically changed in the sense of forcing people into new realities that would ensure stability and survival. The losses the displaced suffer extend beyond economic losses (Farber, 2017). Restoring their livelihood requires a range of complex social, environmental, and institutional challenges to be addressed (Adams et al., 2016). This has placed them in an increasing vulnerability condition. The vulnerability has been augmented by the reduced access to natural resources and increased

difficulties in earning an income. Despite the policies implemented by the Pakistani government towards resettlement of these people, it is a challenge to meet their specific needs in terms of settlement (Surjan, Kudo, & Uitto, 2016; He et al., 2018; Henri, 2019; Nisar et al., 2024; Ali et ali., 2022; Khan, & Kiran, 2018).

The Dasu Hydropower Project has greatly affected the socioeconomic conditions of the nearby villages. Unfortunately, the huge land acquiring that necessitates reservoirs and associated infrastructure needs have led to problems in numerous homes, small businesses, and farm livelihoods (Zoomers, & Otsuki, 2017). A question arises regarding how evacuees sustain their livelihoods and whether social amenities help them recover. Although there is some provision made by the government to aid in resettlement, there still exists a void regarding the different livelihood strategies that are adopted by the affected households and the factors affecting their choices (Gomersall, 2018).

In the instance of DHPP, a considerable portion of residences, small businesses, and agricultural practitioners have experienced the project's repercussions due to extensive land acquisition for the reservoir and associated facilities. This has resulted in a diverse range of socio-economic effects on the local population and their means of living, as reported by WAPDA in 2014. The project has prompted a need to understand the strategies adopted by relocated individuals to sustain their livelihoods and the impact of social amenities on the reconstruction of their lives. Furthermore, there is limited knowledge about the variety of livelihood strategies adopted by resettled households. This research tries to fill in the gaps of knowledge because it is a case study that will add to the growing body of research on how people in rural Kohistan are creatively exploring multiple avenues for their livelihoods. As noted in 2014 by WAPDA, the Pakistani government has been concerned about the resettlement of people affected by the Dasu Project and economic displacement that took place during its execution. This study highlights how people with particular problems are trying to rebuild their livelihood and looks at the role of surrounding social amenities in support of that reconstruction under constraints. The research adds to the current literature on shifts in livelihood strategies, focusing on micro-enterprises. The insights that can be derived from this study can be instrumental for policymakers and advocacy groups in crafting rural development programs, policies, and strategies aimed at facilitating livelihood transitions to ease the difficulties encountered by displaced individuals. Evidence of the variations of livelihood strategies offered for resettled households as well as the aspects that have a bearing on their choices can be ascertained by this study.

A case study utilizing the DHPP resettlement scheme, encompassing both internally displaced persons and forest evictees by conflict, throws more light on the factors driving livelihood diversification among resettled communities. This case study is useful material for the government in planning the resettlement projects, as well as the alignment of the policy regarding the resettling of all households that are considered internally displaced thus affecting government expenditures. Moreover, the findings help in forecasting the future resettlements associated with significant infrastructure projects. This research is one of the few independent quantitative examinations of the consequences of development-induced displacement and resettlement programs that have arisen as a result of the building of huge dams in rural regions of Pakistan. The main objective for this study is to assess the impact of the DASU Hydropower Project on the livelihoods and to identify the key issues and challenges faced by the affected communities in the process of resettlement. This research paper also highlights that the Dasu Hydropower Project has affected the livelihoods of local communities, leading to a decline in their income and overall socio-economic well-being.

METHODOLOGY

Kohistan, which literally translates to "land of mountains," is a region that is characterized by a wide range of distinctive geographical characteristics. What distinguishes Kohistan from other regions is the presence of impressive mountain ranges that surround the narrow Indus valley. The region is well known for its pleasant summers, particularly in the lower altitudes, and it's very harsh winters with abundant quantities of snowfall, particularly in the higher elevations, when temperatures often dip below freezing. It is the monsoon that has an effect on the lower Kohistan region. Since it stretches between Tibet and Karachi, a situation as presented by Indus River is unique in terms of constructing dams but very advantageous in energy production. Thus, the authorities have designs to put together a couple of dams along the Indus River.These dams would make advantage of the hydroelectric potential of the region and include the Bonji, Diamer Bhasha, Dasu, Pattan, Thakot, and Tarbela dams. The main objective of this study is to assess the impact of the DASU Hydropower Project on livelihoods and to identify the key issues and challenges faced by the affected communities. The study has adopted a quantitative research approach, and the population of interest consists of households affected by the Dasu Hydropower Project in Kohistan District. The probability sampling technique has been employed, specifically utilizing a systematic random sampling approach. The intended sample size was 245 business/commercial structures affected by the Dasu Hydropower Project. However, constraints in terms of time and resources

prevented the researcher from reaching the target, leading to the collection of data from 200 respondents. For data collection the researcher employed an interview schedule to pose questions to respondents and record their answers.

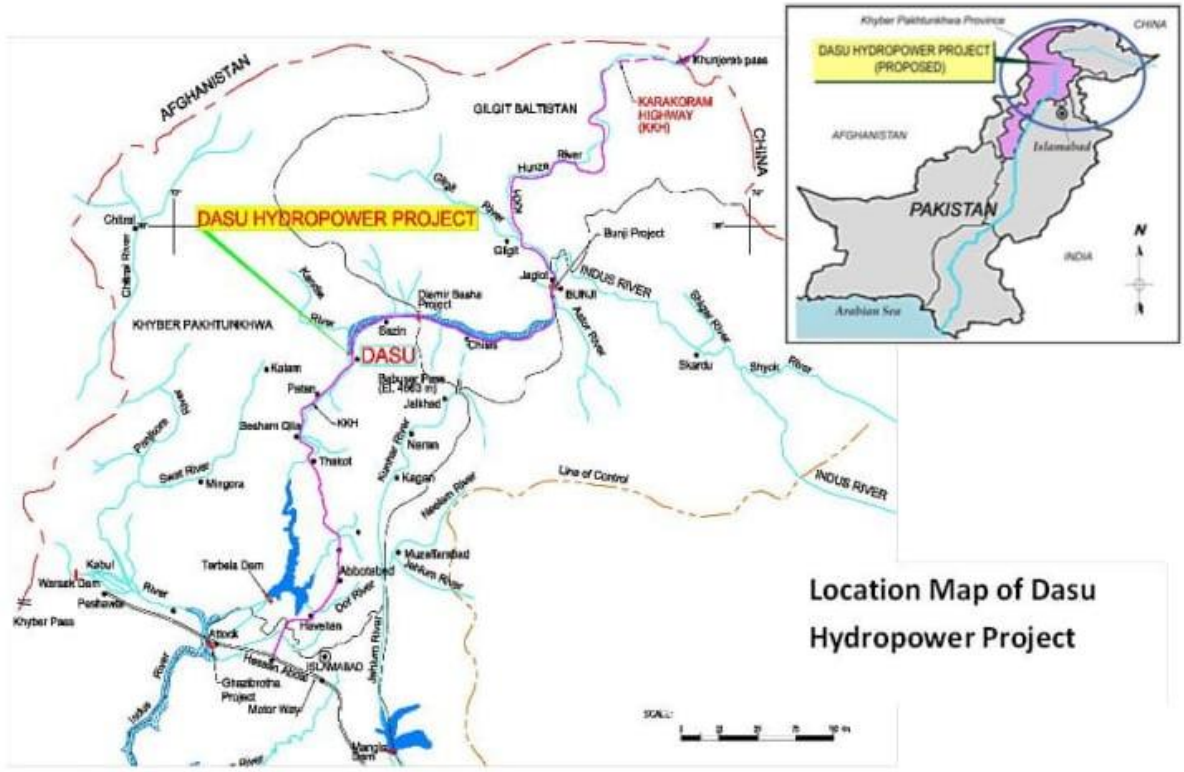


FIGURE 1: MAP OF THE STUDY AREA

RESULTS

The researcher interpreted the examination of the data gathered for this study, with a subsequent discussion of the acquired results. The data for this research was gathered via interview schedule and subsequently inputted into the Statistical Package for Social Sciences (SPSS). Using SPSS, the researcher finds that the majority of the participants were aged in the category of 26 to 35 years old (44.5%). However, the marital status of the participants indicates that 68% are married, 48% are unmarried, 5% are divorced and 6% are widowed. Moreover, the education level reveals that 57% are Intermediate and 17% are graduates. The findings demonstrate that 41% live in Joint family system while 30% in Extended and only 28.5% live in nuclear family system. These demographic profiles paint a detailed picture of the participant profile, with an equilibrated and representative group in the study area.

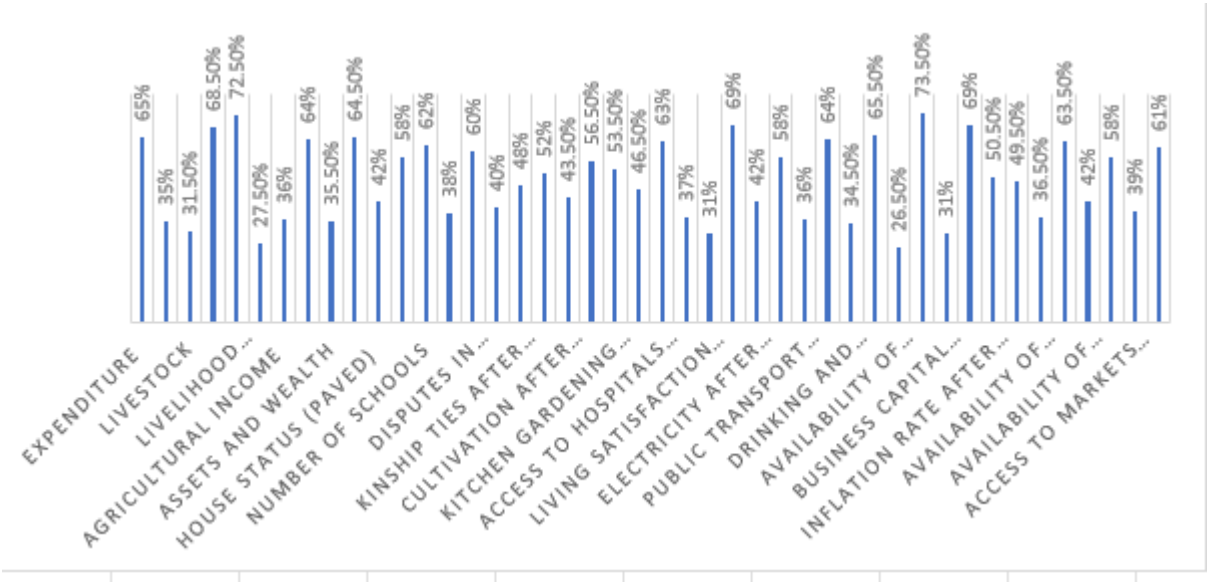


FIGURE 2: CHANGES AND CHALLENGES FACED BY THE MISPLACED COMMUNITIES AFTER RESETTLEMENT

The data shows (figure) significant variations and setbacks faced by communities since resettlement. 65% of the respondents show an increase in household expenditures; thus, a burden on income. Livestock, agricultural income, and assets declined at a significant percentage of 68.5%, 64%, and 64.5% respectively, and this reflects financial stress. More people, at 72.5%, faced livelihood-related challenges, and more, at 69%, claimed that living standards had decreased. On the infrastructure side, access to hospitals has increased by 63% and to schools by 62%, while public transport, paved roads, and electricity have decreased for most respondents (64%, 73.5%, and 58%, respectively). Social relationships have also changed: disputes have increased (60%), and kinship ties have weakened (52%). Business capital has also declined by 69% of respondents, while market access and community facilities have decreased for 61% and 63.5%, respectively. While there is improvement in some services, data shows the ongoing socio-economic problems and low quality of life in resettled communities.

The study shows that the Dasu Hydropower Project has significantly impacted the livelihood activities of the affected communities, with serious challenges. It is reported that 56.5% showed a decrease in their income after resettlement, which is a sign of financial hardship, 27.5% remained neutral, and 16% disagreed. More than half, 52.5%, experienced land loss due to the project, which underlines the serious displacement effects, with 33.5% neutral and 14% disagreeing. Almost half, 48%, said that business opportunities decreased, while 32% were neutral and 20% disagreed. Fishing, a vital source of livelihood, was affected for 48.5% of the respondents, while

39.5% were neutral and 12% disagreed. Changes in the availability of irrigation water were reported by 56%, which reflects agricultural challenges, while 30% were neutral and 14% disagreed. These findings highlight the wide-ranging bad impacts on livelihoods in terms of income, land, enterprise opportunities, and essential activities, such as fishing and irrigation.

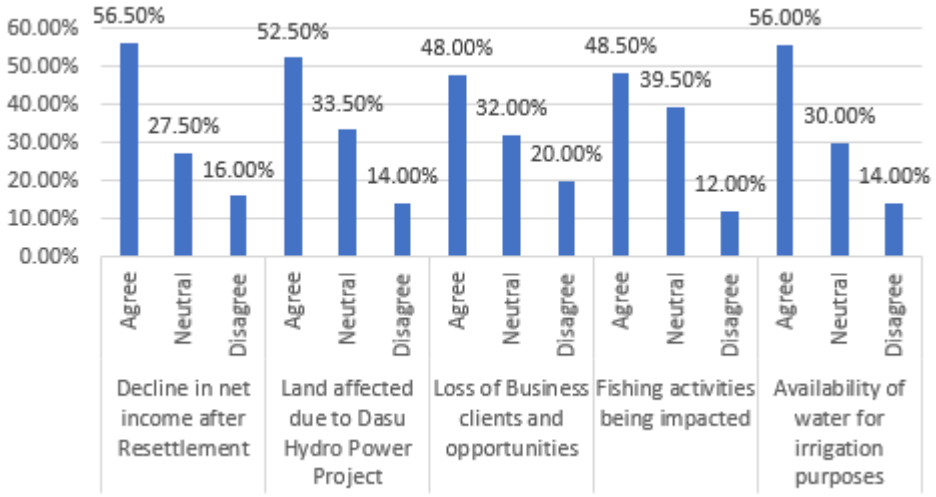


FIGURE 3: IMPACTS OF DASU HYDRO POWER PROJECT ON LIVELIHOOD ACTIVITIES

The study also demonstrates the environmental and economic impacts the Dasu Hydropower Project has on communities. A slight majority, 52.5% of respondents agree that the project has had negative impacts on the forest resources that point to an environmental impact. Moreover, 62% notice changes in job opportunities since the commencement of the project, reflecting an alteration in the local job market. Only 28% think that the project has resulted in the loss of traditional livelihoods, but a large majority 60% disagree, indicating that traditional practices are very resilient. Further, 54% do not believe that the project has impacted grazing lands, meaning most people have not had their resource impacted by the project. Similarly, 54% disagreed with the notion that the project had interfered with the markets for local products, indicating steady demand for those goods and services. The findings are thus indicative of significant employment and environmental changes while still hinting at traditional livelihoods and local markets being relatively resilient against the more widespread impacts of the project.

The study's results also point to the social and policy implications that the Dasu Hydropower Project has for the communities affected. As such, 60% said the project affected their social cohesion or community dynamics. Only 20% said policies appropriately responded to the problems of

livelihood, while 55% said they disagreed with that, which would suggest that there was dissatisfaction with the policies implemented. An impressive 62% disagreed with the view that livelihoods have improved in different ways using what is being or has been attempted so far as strategies and policies; this therefore calls for effort that is more aptly targeted. Only 28% could identify themselves as assisted or capacitated towards other kinds of livelihood; at the same time, 42% disagree-people feel hardly anything is happening to capacitate them. Over half 54% noted that the current policy attempts towards improving livelihood challenges were insufficient and required more inputs. The findings show that there is inadequate proper implementation of policies, support for alternative livelihoods, and major social change, and thus, the strategy to be applied in addressing the issues of the community needs to be all-inclusive and holistic.

This research also refers to the challenges and issues in terms of livelihood influence owing to the Dasu Hydropower Project. Only 28% of the respondents thought there existed proper collaboration concerning livelihood development support, and 48% disagreed with this proposition, showing a lack of support from the external side. In fact, 58% felt information about the measures in place and government policies was neither transparent nor accessible, signifying gaps in governance. More than half, 54% reported losing crucial business customers which has further constrained economic activities. No less than 66.5% agreed they had lost locational advantages including proximity to roads, which illustrates the logistical hassle they face. In over half of cases, or 52%, families relied on their personal savings and investments; however, such patterns indicate financial weaknesses. Institutional responses, the disappearance of economic options, and relying on household or personal sources amplify livelihood dilemmas in vulnerable groups.

Livelihood Impact Challenges the Dasu Hydropower Project is also characterized by the challenge and concern it presents in livelihood impacts. 28% respondents feel that collaboration on livelihood development was effective. In contrast, 48% disagree, reflecting lack of support from external organizations. A lot, 58%, felt information on existing measures and policies were not transparent nor accessible, suggesting some gaps in governance. Greater than half, 54%, said they have lost key clients, which made the economic life worse. Slightly above 66.5% agreed with the statement that they had lost locational advantage, such as being close to roads, but it emphasizes logistics. More than half, that is 52%, relied on personal savings and investments to tide over their problems, which puts a question on their financial resources. Such findings reflect the insufficiency in institutional support, the loss of economic opportunities, and dependence on personal resources;

these factors intensify the challenges associated with the livelihoods faced by the communities.

In this study, the findings are going to elucidate the livelihood challenges and diverse socio-economic impacts arising from the Dasu Hydropower Project. Pearson Chi-Square value of 9.375 ($p = 0.009$) suggests a significant correlation between livelihood challenges and the decrease in income in the affected communities. This indicates that the difficulties experienced after resettlement, such as reduced access to resources and limited economic opportunities, are closely related to a drop in household income and overall socio-economic health.

TABLE 1: RELATIONSHIP BETWEEN LIVELIHOOD CHALLENGES AND SOCIO-ECONOMIC IMPACTS OF THE DASU HYDROPOWER PROJECT

Relationship between livelihood challenges and reduction in income			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	9.375	2	0.009
Relationship between Livelihood Challenges and Changes in employment opportunities			
Pearson Chi-Square	6.689	2	0.035
Relationship between Livelihood Challenges after resettlement and Local loss of local business clients			
Pearson Chi-Square	5.507	2	0.064

In a similar light, the chi-square value, linking livelihood stressors to shifts in employment options, is significant ($\chi^2 = 6.689$, $p = 0.035$), which means this also implies an interruption in a pattern of locality-based employment because the people will have to face new or few job opportunities more intensifying in their livelihood struggle. However, the connection of livelihood challenges with the loss of local business clients was not statistically significant ($\chi^2 = 5.507$, $p = 0.064$). Though it exists, it has not reached the threshold; one may assume that several factors other than settlement issues might explain the retention of clients and these include market conditions or individual business strategies. These findings point out the socio-economic disruption that affected communities have experienced, emphasizing the need for targeted interventions to redress income losses and employment problems.

DISCUSSION

This study illustrates the complex socio-economic challenges faced by communities due to the

Dasu Hydropower Project (DHPP). It is a combination of empirical data with theoretical insights on development-induced displacement and resettlement, which would provide a deeper understanding of the effects of large-scale infrastructure projects on local populations.

The study indicates that the displacement caused by the DHPP has affected the livelihoods of the resettled communities. Most households reported higher costs (65%) and also reductions in vital income sources, including livestock (68.5%), agricultural income (64%), and assets (64.5%). These changes indicate financial vulnerabilities and reduce economic stability for displaced families. In addition, 72.5% indicated a rise in livelihood challenges while 69% witnessed a reduction in living standards, pointing to socio-economic pressures introduced by the process of resettlement. Although, on some points, access to social infrastructure including hospitals has picked up (63%) and schools 62%, all these are clouded by declines on other important accounts.

Most respondents reported adverse effects on public transport, paved roads, and electricity supply; the percentages for difficulties were 64%, 73.5%, and 58%, respectively. Such infrastructural setbacks only increase the logistic and economic pressures on displaced families. Furthermore, social relations have been adversely affected, as conflicts have risen for 60% of respondents and ties between relatives have loosened for 52%, thereby further complicating efforts to sustain community cohesion and social support systems. The study shows extreme economic challenges; that is, it shows 69% depreciation of business capital and 61% decline in access to market. These trends characterize more the bigger disruptions in economies with affected communities mostly trying to reclaim their means of livelihoods. Environmental challenges-such as how the process harms forest resources for 52.5%-of the involved population, mostly based on natural products, pose other challenges. However, some of the traditional livelihoods, such as grazing and local markets, have survived, and there is a potential for targeted support to strengthen these sectors.

The results indicate serious inadequacies in resettlement policies and institutional support. More than half of the respondents (55%) were dissatisfied with the existing policies that were supposed to address livelihood challenges, and 62% disagreed with the notion that livelihoods had improved under the existing strategies. Also, 58% of respondents felt there was insufficient transparency and openness around the measures taken by government agencies, which essentially boiled down to governance failures. That a staggering 52% of households depend on personal savings and investments speaks volumes about the institutional shortcomings, where vulnerable groups suffer the direct brunt of resettlement problems.

One of the important consequences of DHPP has been the disruption of livelihoods. The forced evacuation of approximately 3,000 households, that include farmers, small traders, and urban residents, has not only displaced them from their physical abodes but has also affected the economic stability of these people. The authors had indicated their findings that loss of agricultural land and access to natural resources force many families into alternative means of survival, which often fails them. This situation mirrors the concept of livelihood vulnerability theory, which stipulates that shocks such as displacement worsen the existing socio-economic imbalances and heighten the risk of falling into poverty.

Many people express dissatisfaction with the compensation and support received after being displaced. The resettlement policies implemented by the Pakistani government and project developers have shown significant gaps in practice, especially as far as fair financial compensation and access to social services on time are concerned. This results in lower living satisfaction and increases economic insecurity for the displaced populations, as resettlement programs focus more on physical relocation than socio-economic stability. The disruption of social and cultural relationships with previous locations has also added to the problems, besides economic dislocation, as the disruption of kinship networks, loss of community cohesion, and decline of traditional practices have exacerbated the problems of resettlement. For example, competition for land and resources has intensified, making the relationships between and within communities even more taut. Such outcomes underscore the need to take into account social and cultural aspects in resettlement planning to mitigate psychological and social impacts of displacement.

Although the DHPP has transformed infrastructural conditions and brought improvements, such as more roads and better schools, much of the findings indicate that many of these resettled households lack proper accessibility to services that are vital in life, like health and pure water. Therefore, uneven development of social infrastructure has caused more inequalities between various displaced households compared to the well-off communities in terms of getting more benefits out of resettlement. This thus calls for a proper resource distribution so that it favors the needy through targeted interventions toward vulnerable groups.

The study also looks at the strategies of the displaced households in adapting to their new situation. Many of them have adopted livelihood diversification, such as seeking non-agricultural employment or starting micro-enterprises, as a means of coping. However, their capacity to succeed with these strategies is often constrained by limited access to financial resources, markets, and training opportunities. These findings clearly indicate the demand for skill development

programs, financial support, and market linkages to build robustness in the resettled community.

The findings of this study have significant implications for policymakers and project developers. It is important to establish effective compensation mechanisms so that those affected by displacement receive fair and timely financial support, especially for families. This offers an overview of problems that communities across the country have been facing because of DHPPs, thereby bringing a wider concern within the domain of development-induced displacement in Pakistan, as well as other regions, worldwide. Therefore, while Pakistan develops ambitious infrastructure, economic growth should be balanced by social justice and environmental sustainability. Future resettlement efforts will take insights from this research to guide them in providing the benefits of development projects more equitably to displaced communities as their rights and well-being are protected.

Though this research is highly valuable, there are some limitations of this study. The outcome derived from a case study about an instance can limit its generalization to other circumstances. In future research, outcomes can be compared of resettlement at various infrastructure projects in Pakistan and in other developing countries. Further, longitudinal studies might be done about the long-run impacts of displacement and resettlement on the communities.

CONCLUSION

The Dasu Hydropower Project (DHPP) showcases the complex socio-economic issues which develop due to development-induced displacement and resettlement. Though it has been built to fulfill Pakistan's increasing energy needs, this project has displaced approximately 3,000 households comprising farmers, urban dwellers, and fishermen, who are greatly affected in their lives. This study illustrates significant problems including low incomes, scarce natural resources, and weakened community ties. While the government has taken its share of initiatives, the policies which have been developed thus far are not good enough at offering sufficient compensation as well as support for their livelihood, and access to various essential services. The research illustrates the need for a holistic and sustainable resettlement planning approach. In order to effectively address economic and social problems of the affected communities, the compensation strategies have to be much better, fair distribution of resources must be ensured, and programs targeted like skill training and market access should be developed. Further, cultural and social factors integrated into resettlement policies may minimize the psychological and relational impacts of displacement.

This study is very valuable for understanding the socio-economic impacts of the DHPP, adding to the discourse of infrastructure development and displacement. It provides crucial policy

recommendations for policymakers, project developers, and advocacy groups in designing equitable and inclusive resettlement strategies. These findings are relevant for the planning of future infrastructure projects in Pakistan and other countries across the world, underlining the importance of the requirements and needs of affected communities in development projects. This study is significant in that it provides meaningful insights while also acknowledging some of its limitations, such as a single-case study, which may restrict the generalization. Future research might include comparative analyses of displacement and resettlement in different infrastructure projects and longitudinal studies to assess the long-term impacts. Addressing such gaps will make future studies able to dive deeper into understanding how economic development can be balanced with social justice and environmental sustainability.

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