

Doctoral Dissertation

**Assessing the Social and Economic Impacts of Mining-Induced  
Displacement and Resettlement and Optimal Compensation  
Policy Design: The Case of Aynak Copper Mine Project,  
Afghanistan**

Summary

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The literature indicates three main triggers of displacement: disaster, conflict, and development. The focus of this dissertation is on development-induced displacement, especially, mining-induced displacement and resettlement (MIDR). Mining-related activities accounted for a massive portion of all displacements across the world though, arguably, such projects are required to improve the society. However, it is well-established that such relocation has negative socio-economic consequences for those who are impacted if suitable restoration measures are not implemented.

This dissertation presents empirical evidence on the causal influence of involuntary relocation on households' socioeconomic outcomes. It highlights and fills the gap in the existing body of research especially in the main strands of existing development-induced displacement and resettlement literature by using case studies of the Aynak copper mining project in Afghanistan. Overall, this research examines the socio-economic consequences of relocation and proposes a compensation program that best suits the socio-economic circumstances of the population affected by the mine. First, it examines the short-term impacts of displacement on the income and consumption of the relocated households, and on social capital. Second, it proposes a compensation scheme that is ideal for mitigating the negative impacts of relocation. Finally, it analyzes the long-term effects of relocation on displaced households.

The major findings of the study can be divided into chapters. Chapter 1 comprises the background, motivation, research questions, conceptual framework, objectives, and an overview of the study area and methodologies. Chapter 2 discusses the role of social networks in Afghanistan. The most enduring aspect of displacement and settlement in the country has been social networks based on kinship, ethnicity, economic ties, faith, and party politics. When people of the same tribe, dialect, and kin are in trouble, they trust and devote their resources to one another. This provides them with socio-economic protection while also tying them together via social ties. Social networks in Afghanistan are difficult to re-establish once they have been lost. The broad and fragmented differences in Afghan culture based on language, religion, rural technology, and other social institutions are among the most important variables shaping social networks in Afghanistan.

Furthermore, Chapter 2 examines how forced relocation due to land acquisition for the development of a copper mining operation in Aynak, Afghanistan, affects household income and consumption habits. It utilizes a difference-in-differences

(DID) method to assess the households' income and consumption patterns in the displaced village before and after the forced relocation with those households that had not yet been displaced. The data were gathered across two time periods. Initially, just before the relocation in 2011, when the Afghan Ministry of Mines and Petroleum performed the first round of surveys to devise a Resettlement Action Plan. Thereafter, for the perusal of the current study, the second wave of survey for post-relocation data collection was undertaken again in 2015. The data reveal the dismal nature of relocation. It shows that displacement discouraged community participation among people and that those relocated have lost social ties.

Furthermore, displaced households have lost access to their agricultural land and consequentially, to their agriculture-based livelihoods. The daily labor outside the mines has also been reduced. The government should use previously identified alternative residential land to relocate affected households to those land at the earliest. Moreover, monetary compensation is required to close the income gap caused by the relocation. Accurate analysis of agricultural land, particularly the quality of substitute land, is necessary to guarantee the income of project affected families (PAFs) following relocation and, leading to a successful relocation procedure in the future. The development community might provide technical support and function as an arbitrator to facilitate a fair relocation process.

The PAFs are hesitant to accept an inferior compensation package. The problem has remained unaddressed for more than a decade. Furthermore, the land purchase and resettlement procedure at Aynak lacked sufficient consultation, which resulted in the impacted people not being included in decision-making. To solve this issue, Chapter 3 proposes an optimum compensation policy design based on the preferences of Aynak mine-affected households. Using a randomized conjoint experiment, this chapter investigates the impact of compensation policy attributes on the acceptance probabilities of households affected by the Aynak copper mining project in Afghanistan. In the experiment, a set of hypothetical compensation packages consisting of eight attributes: resettlement as a unit, provision of a public good – a community facility, timing of the relocation, provision of agricultural land, quality of agricultural land, provision of residential land, loans for the construction of a house in the new resettlement area, and additional monetary compensation were presented to the respondent. Each attribute has different levels, which are randomly allocated. The respondents were then asked to rank alternative compensation policies that

incorporate varying levels of these attributes and their willingness to accept (WTA) for relocation.

Chapter 3 also provides an overview of the international legal framework and concludes that the resettlement and compensation processes in the Aynak copper mine project were poorly implemented without proper participation of the PAFS, which violates both the international and domestic legal frameworks. Consequentially, the PAFs contended that the procedure was murky. Chapter 3 also demonstrates the relevance of social ties for PAFs and the value of agriculture as a livelihood and monetary recompense, based on a problem-solving and stakeholder-oriented approach. Those who were relocated valued social connections more than monetary recompense. These findings imply that the compensation package should be established considering the viewpoints of the PAFs. In the case of the Aynak project, restoring social ties and livelihoods, as well as providing loans, would help PAFs in getting back to normalcy and once again establishing social ties. Thus, this study indicates compensation packages that contain aspects linked to social capital, livelihood restoration, provisions to prevent homelessness, and monetary compensation. Furthermore, the experimental model of this study may assist governments and resettlement practitioners in other developing countries in understanding the required compensation package of PAFs prior to the execution of resettlement programs.

It is also critical to evaluate whether displaced people will eventually recover from the social and economic shocks caused by displacement. Therefore, we conducted a household socioeconomic survey of the Aynak mine-affected communities after a decade to pursue this objective and explore the changes and the results. The questionnaires used in the 2011 survey were used to collect data from both relocated and unrelocated villages in 2021. Chapter 4 includes a detailed analysis based on the DID method on two-period data. The findings revealed that, even in the long run, the social and economic status of the displaced households has not improved, and they are still suffering from poverty and shattered social networks. However, such households were found to be more resilient, as they now try to adapt to the new ways of life. Displaced households have increased investment in assets, such as vehicles and livestock. It is also noticed that access to education, markets, and health facilities for the relocated households compared to unrelocated ones has increased. Contrarily, relocation had negatively affected the social life and income of the relocated households. Alternatively, relocated households are now adapting to a unfamiliar

environment. However, in the empirical analysis, we could not determine whether displacement has emotionally and mentally affected households.

Chapter 5 concludes the dissertation by making pertinent recommendations. The findings of this dissertation have substantial practical consequences since they provide empirical findings concerning the impacts of relocation in the short and long run. This provides evidence that mining-induced displacement and resettlement practices undermine PAFs both socially and economically. As a remedy, the optimal compensation strategy presented in Chapter 3 will assist in mitigating additional socioeconomic losses to Aynak-affected households. According to the findings of this study, involuntary displacement should be prevented, and PAFs should be actively involved in discussions throughout future resettlement.