

The Impact of Agricultural Land Reclamation and Conversion on Farmers' Livelihoods: A Case Study of the Thai Nguyen Stadium Project in Phuc Trieu Commune, Thai Nguyen City, Thai Nguyen Province

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ABSTRACT: This study focuses on evaluating the impacts of agricultural land reclamation and conversion on the livelihoods of households affected by the Thai Nguyen Stadium Project in Phuc Trieu Commune, Thai Nguyen City. The research employed a combination of methods, including information collection through literature review and interviews with households whose agricultural land was reclaimed. Collected data were synthesized to analyze and evaluate the economic conditions of farming households post-reclamation. Statistical analysis and comparative methods were applied to examine changes in key indicators, such as employment and income, before and after the reclamation and conversion of agricultural land in the study area. The findings reveal that the project has had significant impacts on the lives of local residents. Specifically, the reclamation and conversion of agricultural land have altered the labor structure, employment opportunities, and income levels of the affected population. These results provide a basis for proposing necessary measures to enhance the effectiveness of land-use planning and management in the local context.

KEYWORDS: Agricultural land, land acquisition, land use conversion, livelihood, Thai Nguyen stadium.

I. INTRODUCTION

The reclamation and conversion of agricultural land to non-agricultural purposes, particularly for urbanization, have become an increasingly prominent concern worldwide. Wasilewicz-Pszczółkowska et al. analyzed changes in the extent of degraded land, land reclamation measures, and the transformation of agricultural land for non-agricultural uses [1]. In China, land reclamation efforts have successfully restored damaged land for agricultural purposes, increasing arable land and per capita grain yields [2]. However, in regions such as Malopolska, Poland, high-quality agricultural land is being irreversibly converted into residential use, underscoring the urgent need for measures to protect farmland [3]. Economic factors significantly drive this transformation in suburban areas, where land subdivision procedures have increased land value by approximately 10% [4]. While such conversions may offer short-term economic benefits, they can result in long-term social, economic, and environmental consequences, potentially impeding sustainable development [4]. In Vietnam, the reclamation of agricultural land for socio-economic development has had profound impacts on the livelihoods of affected communities [5]. A study on the Cau Dau Urban Area project revealed a substantial reduction in agricultural land holdings among households, ranging from 32.6% to 81.1%. Income from agriculture declined from 82.6% to 38.9% of total household income. However, household income improved overall due to

shifts toward freelance labor and non-agricultural activities [6]. These findings emphasize the necessity of implementing effective measures to ensure that communities can transition smoothly during the conversion of agricultural land for non-agricultural purposes [7]. Such solutions are critical to achieving balanced development and safeguarding long-term sustainability.

Thai Nguyen City, classified as a tier-one urban area, is the economic growth hub of Thai Nguyen Province, exhibiting the highest rates of urbanization and industrialization within the region. As of now, the province hosts 185 active foreign direct investment (FDI) projects with a total investment capital of approximately USD 10.5 billion. In the first six months of 2023 alone, the province approved 15 new FDI projects, totaling USD 116.75 million in registered capital. This economic growth has led to an increasing demand for land to accommodate development projects. The Thai Nguyen Provincial Stadium Construction Project, overseen by the Thai Nguyen Civil and Industrial Works Construction Investment Project Management Board, spans an area of over 15 hectares in Phuc Trieu Commune, Thai Nguyen City. According to official statistics, 94 affected households have been surveyed and inventoried, with nearly 14 hectares of land reclaimed and a total compensation cost of VND 155 billion. This land reclamation has significantly impacted local labor, employment, household incomes, and the livelihoods

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of affected communities, as well as other stakeholders and the overall investment efficiency of the project.

In Thai Nguyen, studies on the impacts of land reclamation have been conducted [8, 9, 10]. However, no specific research has yet focused on the Thai Nguyen Stadium Project. This study was undertaken to assess the impacts of agricultural land reclamation and conversion on the livelihoods of farming households affected by the stadium project.

II. METHODOLOGY

Secondary Data Collection and Analysis: The study utilized secondary data from a variety of sources, including statistical surveys conducted by the district statistics office, yearbooks, and records from functional departments of Phuc Trieu Commune People's Committee, Thai Nguyen City People's Committee, and the Department of Natural Resources and Environment. Additional data were sourced from relevant journals, newspapers, and reports. These materials encompassed information on agricultural land reclamation and conversion, as well as data on labor, employment, and income of farming households within the study area. The collected data were systematically analyzed to meet the research objectives.

Fieldwork, survey: The research incorporated direct field investigations and surveys targeting households affected by agricultural land reclamation for the Thai Nguyen Stadium Project. Two primary techniques were employed:

+ **Participatory Rural Appraisal (PRA):** This technique engaged local residents to collect qualitative and quantitative information regarding household income, consumption, production activities, and experiential knowledge. PRA enabled an in-depth analysis of challenges faced by households due to agricultural land reclamation, as well as a review of existing research findings.

+ **Individual Household Interviews:** Structured interviews were conducted with heads of households, particularly the 94 families identified by the Thai Nguyen City People's Committee as requiring compensation due to the stadium project. Among these, 44 households were directly affected by agricultural land reclamation. This method facilitated the collection of precise and individualized data on the socio-economic impacts of land reclamation.

The number of households was selected for interview according to Slovin's formula [11]:

$$n = \frac{N}{1 + N(e)^2}$$

Note: n: Number of household to be surveyed

N: Total number of households whose agricultural land was recovered (44 households)

e: Allowed error. Choose e = 5% (95% confidence level).

From the Slovin's formula, the study randomly selected 40 households to conduct the survey.

Data processing: Collected data is classified and arranged systematically through grouping and put into tables. Processing and calculating data and research indicators are conducted on computers using Excel software and SPSS 20.0 software.

III. RESULT AND DISCUSSION

3.1. Compensation, Support, and Resettlement Policies for the Thai Nguyen Stadium Project

The project implemented policies to provide compensation, support, and resettlement for affected households, including reimbursement for reclaimed land and crops. The total compensation budget for the project amounted to nearly VND 170 billion. The compensation rates for reclaimed land were determined in accordance with legal provisions, specifically based on the decision on compensation, support, and resettlement for state-initiated land reclamation in Thai Nguyen (Decision 31/2012/QĐ-UBND), as well as the provincial land price framework issued for the 2020–2024 period (Decision 46/2019/QĐ-UBND). The specific compensation rates for this project are outlined as follows:

+ **Residential Land:** Compensation rates vary based on classification, including adjacent residential land, roadside residential land, and unlocated residential land.

+ **Agricultural Land:** Compensation rate of VND 125,000 per square meter.

+ **Crops:** Compensation rate of VND 2,000 per square meter.

+ **Forest Land:** Compensation rate of VND 120,000 per square meter.

+ **Perennial Crop Land:** Compensation rate of VND 125,000 per square meter.

In addition, compensation and job support for farmers whose land is recovered is 35 million/sao, and housing rental support is 800,000 VND/person. The project implements a resettlement area, in the Thai Nguyen stadium project, 7 households have moved to the resettlement area in Quyet Thang commune. People are supported with jobs for 6 months. Survey results show that the compensation price is satisfactory for the people.

3.2. Impacts of Agricultural Land Reclamation and Conversion on Livelihoods

3.2.1. General Characteristics of Surveyed Households
The fundamental characteristics of the surveyed households are presented in Table 1

A survey of 40 households revealed a total population of 320 individuals, with an average household size of 8.0 persons and 2.6 laborers per household. This data indicates a relatively high number of laborers within the surveyed households. Regarding gender distribution, males accounted for a higher proportion than females, representing the primary workforce and serving as the main breadwinners. Most male laborers are engaged in industrial and small-scale industrial activities (CN-TTCN).

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In terms of educational attainment among household heads, the survey showed that 30.84% had completed primary education, 41.34% had completed secondary education, and 27.82% had completed high school. These figures suggest that the proportion of household heads with higher educational levels remains low, posing challenges in adopting and applying advanced scientific and technical innovations in production. Consequently, efforts to improve the awareness and knowledge of local residents are necessary to enhance land-use efficiency and agricultural productivity.

The socioeconomic status of households was also analyzed, showing that 62.08% of households fall into the poor and average income categories, while 26.07% are considered relatively well-off, and only 11.85% are classified as wealthy. Notably, wealthier households tend to engage in trade, services (TM-DV), and industrial or small-scale industrial activities (CN-TTCN). Conversely, low-income households primarily rely on agricultural production, making their incomes particularly vulnerable to the loss of agricultural land

Table 1. Demographic and Labor Characteristics of Surveyed Households

Targets	Unit	Amount
Number of households surveyed	Household	40
Number of people	People	320
- Male	People	191
- Female	People	129
Proportion of people in a household	People	8,0
Percentage of workers in a household	People	2.06
Educational level of the head of household		
- Level I	%	30,84
- Level II	%	41,34
- Level III	%	27,82
Average Age		41,25
Household group		
- Rich group	%	11,85
- Group of well-off households	%	26.07
- Group of average economic households	%	40,18
- Poor household group	%	21,90

(Source: Survey data)

The average age of laborers was 41.25 years, indicating a workforce in good health with a relatively high capacity to adapt to new opportunities. This demographic feature provides favorable conditions for job transitions following the reclamation of agricultural land.

3.2.2. Land Status of Surveyed Households Before and After Reclamation

Upon examining Table 2, it is evident that all three types of land holdings among the surveyed households have decreased following land reclamation. Notably, agricultural land experienced the most significant reduction, with a decrease of 9,825 square meters per household, representing a 60.89% reduction compared to the pre-reclamation period. Residential land saw the smallest decrease, with a reduction of 53.38% compared to its previous size.

Table 2. Scale and Structure of Land Holdings of Surveyed Households (Average per Household)

Targets	Before agricultural land was recovered		After agricultural land was recovered		Comparison	
	Acreage (m ²)	%	Acreage (m ²)	%	+/-	%
Total area	50.365	100	21.990	100	- 28.375	56,33
- Landscape	22.505	44,68	10.490	47,70	- 12.015	53,38
- Agricultural land	16.135	32,03	6.310	28,69	- 9.825	60,89
- Non-agricultural land	11.725	23,28	5.190	11,41	- 6.535	55,73

(Source: Survey data)

3.2.3. Employment and labor after land acquisition of surveyed households
Labor structure

The data in the table indicates that the average number of laborers per household is approximately 2. In terms of gender, males outnumber females, which is a significant factor

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influencing the changes in employment structures. The higher proportion of males tends to lead to an increase in the number of laborers engaging in industries such as manufacturing, small-scale industry, and construction.

Regarding age distribution, the majority of the labor force (40.85%) is between 15 and 35 years old, which presents an opportunity for these households to transition to new occupations and stabilize their livelihoods after land reclamation. Laborers aged 36 to 45 account for 34.42%, and they are typically experienced farmers, so their transition to new professions may face significant challenges. The group of laborers aged 46 to 60, comprising 24.73%, has limited

potential for job transitions due to factors such as aging, physical decline, and a deep-rooted agricultural mindset.

In conclusion, the labor force of the surveyed households is predominantly middle-aged, with most workers lacking formal training. They are mainly engaged in agriculture, often combined with small-scale services. This situation contributes to widespread unemployment and income instability in the district. Following land reclamation, these individuals face even greater difficulties in finding employment and increasing their income. Therefore, it is crucial to implement policies that provide support to these individuals, helping them achieve livelihood stability

Table 3. Labor situation of surveyed households in 2024

Targets	Number (people)	Percentage (%)
Total number of employees	93	
Percentage of workers in a household	2,06	
* Divided by gender		
+ Male	53	56,98
+ Female	40	43,01
* Divided by age		
+ 15-25	17	18,27
+ 26-35	21	22,58
+ 36-45	32	34,42
+ 46-60	23	24,73
* Educational level		
+ Levels I, II, III	52	55,91
+ College and university degree	12	12,09
+ Intermediate and vocational level	29	31,18

(Source: Survey data)

Impact of agricultural land acquisition on labor employment

From Table 4, it is evident that land reclamation has had a positive impact on the restructuring of occupational sectors, gradually shifting away from agriculture. The number of individuals employed in the agricultural sector has decreased by 17, while those working in service industries has increased by 10. However, there have also been negative effects on

individuals who have lost all their agricultural land and have been unable to transition to other occupations. This is due to various factors such as health issues, educational level, and lack of capital. Additionally, the land reclamation process has forced some workers, who previously enjoyed stable incomes from agriculture, to seek employment in other service sectors.

Table 4. Changes in labor distribution among occupations after agricultural land was recovered

Targets	Before agricultural land was recovered		After agricultural land was recovered		Comparison	
	<i>Number (people)</i>	<i>Percentage (%)</i>	<i>Number (people)</i>	<i>Percentage (%)</i>	<i>Number (people)</i>	<i>Percentage (%)</i>
Total number of employees	93	100	93	100		
Labor in the field:	81	87,0	75	80,64	-6	7,4
- Agriculture	17	20,98	10	13,33	-7	41,1
- Agriculture - services	31	38,27	20	26,66	-11	35,4
- Industry - service	10	12,34	20	26,66	10	100
- Other jobs	23	28,39	15	20	-3	13,04

(Source: Survey data)

Note: +/-: Increase or decrease the number of workers in occupations between before and after agricultural land is recovered

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Income situation of surveyed households after land acquisition.

From Table 5, it is observed that the primary income of the farming households prior to land reclamation was predominantly dependent on agriculture (with an average contribution of 36.24%). There were also some households that, no longer engaged in agricultural production, participated in business activities, with income from trade and services accounting for 23.25% of their total income.

After land reclamation, there was a significant change in the income of the households. Specifically, the average annual income per household after land reclamation increased to 58.2 million VND (an increase of 4.01 million VND per year per household compared to the pre-reclamation period). While the total income of the households increased, income

from agricultural production decreased. The income from agriculture after land reclamation was 8.52 million VND per year per household, a reduction of 10.14 million VND per year per household. The increase in household income was primarily due to a significant rise in earnings from trade, services, and small-scale industries, which amounted to 33.8 million VND per year per household (an increase of 9.86 million VND per year per household).

In conclusion, the process of land reclamation has had a noticeable impact on the income of the surveyed households. While income levels have increased, the sources of income have become less stable. Therefore, it is essential for the local authorities to promptly implement policies aimed at stabilizing the livelihoods of households affected by land reclamation.

Table 5. Income structure of surveyed households before and after land acquisition

Income	Before agricultural land was recovered		After agricultural land was recovered	
	Amount (million VND)	Percentage (%)	Amount (million VND)	Percentage (%)
Average household income	54,19	100	58,2	100
Agriculture	19,68	36,24	9,52	16,35
Industry and handicrafts	11,34	20,92	15,55	26,71
Trade in Services	12,60	23,25	18,25	31,35
Others	10,57	19,50	14,88	25,56

(Source: 2024 Survey data)

Difficulties of surveyed households after land acquisition

According to Table 6, after agricultural land was reclaimed, 64.86% of the agricultural land of the surveyed households decreased, which significantly impacted the residents. These households lost their production land, which directly led to the loss of their livelihoods. Consequently, workers were forced to abandon their familiar jobs and professions to seek new occupations, a transition that was influenced by various factors, including investment capital, professional qualifications, health, age, and the local economic conditions that might support job opportunities.

Another challenge that nearly all households faced was that the compensation money was insufficient to purchase an equivalent area of land. As many as 78.38% of the surveyed households encountered this issue. Additionally, when relocating to resettlement areas, numerous shortcomings were reported by the residents during the survey. These included problems such as the lack of a dedicated transformer for the power grid in the residential areas, requiring long-distance

power lines that affected the quality of electricity, and the presence of unusual odors in the drinking water. Upon moving to the new residential area, the infrastructure system, including roads, electricity, and water supply, was inadequate.

More than 70% of the households that had their land reclaimed faced the lack of space for production and business, which affected their sales and revenue. Other challenges included insufficient capital for production conversion, affecting 43.24% of households; a shortage of labor (missing workers), affecting 24.32%; a lack of experience and technical knowledge, affecting 35.16%; and a lack of financial management skills, affecting 37.84%. In conclusion, the residents faced substantial difficulties in establishing new livelihoods to stabilize their lives. Therefore, local authorities must implement more effective measures to create stable conditions for the affected communities.

Table 6. Difficulties of surveyed households after agricultural land was recovered

People's opinions	Level (%)		
	Percentage of households agreeing	Percentage of households unknown	Percentage of households disagree
Lack of agricultural land	64.86	13.51	21.63
The compensation amount is not enough to buy back the recovered agricultural land area	78.38	0	21.62
Lack of production and business premises	70.27	5.41	24.32
Lack of capital for production conversion	43.24	10.81	45.95
Lack of workers	24.32	10.81	64.87
Lack of experience and technique	35.16	8.1	56.76
Lack of financial management skills	37.84	8.1	45.95

(Source: 2024 Survey data)

IV. CONCLUSIONS

The Thai Nguyen Stadium project is a large-scale undertaking with an extended construction timeline, which has had a significant impact on the lives of the local residents. However, the project has provided adequate compensation and support for the affected households. This includes employment assistance, housing rent support, and the establishment of a new resettlement area for households whose land was reclaimed.

The labor structure of the households, following the land reclamation, has undergone a significant shift, with a clear trend toward moving away from agriculture and an increasing number and proportion of workers being employed in non-agricultural sectors. The transition of this labor structure requires well-designed measures to ensure stability for the affected households.

The employment opportunities for laborers after land reclamation have become quite diverse. However, the number of unemployed individuals within the working-age population has risen, while the number of workers engaged in agriculture has declined sharply. In contrast, there has been an increase in the number of workers in non-agricultural sectors.

Regarding income, the households that were affected by the land reclamation have managed to stabilize their livelihoods relatively quickly. They have developed better strategies for economic sustainability, which has led to an increase in their income, and their lives have gradually become more stable. Nevertheless, it remains essential to have a well-structured plan for spending to ensure long-term financial effectiveness. People's jobs after land recovery are quite diverse. Labor in the agricultural sector decreased sharply while labor in non-agricultural sectors increased.

After having their land confiscated, households soon stabilized their lives and found a better livelihood strategy, so most of their incomes increased and their lives gradually stabilized.

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