

Available online at www.HEFJournal.org

Journal of Human, Earth, and Future

Vol. 5, No. 4, December, 2024



# Livelihood Vulnerability Index of Resettled Peasants Displaced by Land Acquisition of An Airport

Embun Sari <sup>1</sup>\*<sup>o</sup>, Joyo Winoto <sup>2</sup>, Endriatmo Soetarto <sup>3</sup>, Zenal Asikin <sup>2</sup>, Sri Fajar Ayu <sup>4</sup><sup>o</sup>, Meutia Nauly <sup>4</sup><sup>o</sup>

<sup>1</sup> Director General of Land Acquisition and Land Development, Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, Indonesia.

<sup>2</sup> School of Business, IPB University (Institut Pertanian Bogor), Bogor, Indonesia.

<sup>3</sup> Faculty of Human Ecology, IPB University (Institut Pertanian Bogor), Bogor, Indonesia.

<sup>4</sup> Universitas Sumatera Utara, Medan, Indonesia.

Received 10 August 2024; Revised 10 November 2024; Accepted 16 November 2024; Published 01 December 2024

## Abstract

This study aims to assess the social impact of land acquisition on relocated farmers who are displaced due to land acquisition. Delays in infrastructure development will have a broad impact. Law Number 2 of 2012 concerning Land Acquisition for Development in the Public Interest addresses the classic problem of infrastructure project development: land acquisition. Eviction due to land acquisition will cause various potential interrelated risks for the affected community, including loss of housing, marginalization, morbidity and mortality problems, and loss of access to collective ownership. This research method uses the Livelihood Vulnerability Index (LVI) approach to assess the response capacity in addressing the risk of change due to the release of agricultural land from external parties, such as the government in the case of land acquisition for Yogyakarta International Airport (YIA). The study results show that the economic and sociological approaches allow the LVI model to reveal the economic, social, and cultural impacts of relocated farmers after 10 years of land acquisition. The value of land compensation must be comparable to the assets taken over in land acquisition. This can be done by increasing response capacity through commercial property ownership, variation in income sources, and job training.

Keywords: Livelihood Vulnerability Index; Peasants; Land Acquisition.

# 1. Introduction

Post-reformation, the Indonesian Government's commitment to improving infrastructure facilities as an effort to generate growth and increase global competitiveness is reflected in the stipulation of the Master Plan for the Acceleration and Expansion of Economic Development (MP3EI) in 2011 [1]. One of the strategies to realize this commitment is the enactment of Law Number 2 of 2012 concerning Land Acquisition for Development in the Public Interest to overcome the classic problem of infrastructure project development, namely land acquisition [2]. Infrastructure development delays

\* Corresponding author: embunsari25@yahoo.com

doi http://dx.doi.org/10.28991/HEF-2024-05-04-07

> This is an open access article under the CC-BY license (https://creativecommons.org/licenses/by/4.0/).

© Authors retain all copyrights.

will have a broad impact. For example, low connectivity in developing transportation infrastructure will not just impact the costs of transporting goods and services. Still, it will broadly result in uneven growth and weak food and social security in Indonesia [3].

Land acquisition in Indonesia, an agricultural country with around 26 million farming households [4], impacts farmers and agricultural land. The impact of land acquisition on farmers has long been a serious concern for researchers. Displacement due to land acquisition will create various potential interrelated risks for the affected people, namely becoming landless, unemployed, homeless, marginalized, food insecurity, morbidity and mortality issues, loss of access to common property, and social disintegration [5]. Cash compensation does not guarantee welfare after land acquisition. Farmers who do not get agricultural land replacement are forced to switch to other livelihoods, and the compensation money will be used for daily consumption; often, they are trapped in consumerist behavior [6]. Joblessness after compensation payments means a lot of time and money for fun, which ultimately causes people to fall into gambling, drinking, and other social ills [7].

Vulnerability is a condition of vulnerability to environmental and social change stress due to the lack of capacity to adapt [8, 9]. In China, the livelihood vulnerability approach is used to evaluate the level of vulnerability of farmers' livelihoods after losing agricultural land due to urbanization [10], climate change [11], and earthquake hazards [12]. The livelihood vulnerability Index (LVI) can describe which groups are more or less vulnerable and in what ways they are susceptible to change. Despite many interpretations, the literature consistently considers the vulnerability of any system as a function of three elements: exposure to stress, sensitivity to exposure, and capacity response to cope, adapt, or recover from the effects of that condition [13]. Exposure involves both levels of pressure on environmental systems and political-social pressure. Sensitivity is the level of how a system is affected by internal and external disturbance factors. Response capacity is the ability of a system to adapt to a disturbance, reduce potential damage, take advantage of existing opportunities, and overcome the consequences of a formed formation [14].

This research aims to study the extent of peasant vulnerability due to land acquisition in Indonesia. Understanding the impact of land acquisition on farmers is essential for strengthening policies. When affected farmers become part of the development process and get decent work and productive assets, accumulation without dispossession will be realized in the land acquisition [15, 16]. Several similar studies have been conducted previously, such as the study by Aji & Khudi [17], which focuses more on socio-economic deprivation and suggests a relevant policy framework for displaced people regarding their welfare and human rights. Furthermore, in the study conducted by Rijanta et al. [18], which focuses more on consistent population patterns from original settlements, those who carry out independent relocation can maintain their financial resources and thus improve their livelihoods in the future as well as other studies conducted by Farid et al. [19], which focus more on land purchases accompanied by several disadvantages, such as increased competition for available jobs, a general decline in living standards, and other problems. The study examines farmers' vulnerability to natural, physical, labor, social, and financial. The risk of displacement due to land acquisition will be used to develop LVI. Land acquisition for Yogyakarta International Airport (YIA) is used as a case study.

# 2. Material and Methods

# 2.1. Case Study

The YIA land acquisition in Kulon Progo, Yogyakarta, is the largest and fastest airport land acquisition after the land acquisition law [20]. It took approximately 645.63 hectares and relocated 518 households [21]. The airport was built in Temon District as most of the land was Pakualaman land owned by the palace, with a small number of residential areas and rice fields [22]. However, statistics show that approximately 73% of households depend on agriculture [23]. The land acquisition involved many small farmers who had lost their farmland [24-28] and shrimp pond [29]. Pakualaman land poses a higher livelihood vulnerability for landless sharecroppers [30]. The existence of Pakualaman land also expanded the peasants' resistance, supported by various organizations and activists [31].

The survey was focused on relocation areas facilitated by the local government (purposive sampling), namely Glagah, Jangkaran, Janten, Palihan, and Kebonrejo villages (Figure 1). In these villages, approximately 279 displaced peasants were relocated [21]. It is hoped that relocating peasants within their homes or nearby villages will minimize the social impacts. The survey was carried out over two days involving 25 surveyors within the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (Ministry of ATR/BPN). In-depth interviews and Focus Group Discussions (FGD) involving farmers, airport authorities, local governors, and other stakeholders were also conducted to sharpen the analysis.



Figure 1. Airport and the relocation of displaced peasants' sites in Kulon Progo, Yogyakarta

# 2.2. Livelihood Vulnerability Index Indicators

In this research, sensitivity/exposure will be expanded to eight displacement risks, as stated in Cernea [5]. LVI models with these indicators are expected to capture more comprehensive impacts. The response capacity to overcome the risk of change due to the release of agricultural land includes three things, namely livelihood assets, livelihood results, and livelihood support from external parties such as the government [10]. A Likert scale of 1–5 is used to express respondents' answers. A score of 1 means strongly disagree, and five means strongly agree with the statement presented [32].

# 2.3. Data Processing

The data processing process is a modification of the approach used in determining the livelihood vulnerability index of land-losing farmers in China [10]. First, data standardization is carried out due to differences in the scale and magnitude of the indicators used. Standardisation uses the following mathematical equation:

$$X_{ij} = \frac{X_{ij} - X_{jmin}}{X_{jmax} - X_{jmin}} \tag{1}$$

where the initial value of the household indicator  $X_{jmin}$  and  $X_{jmax}$  minimum and maximum values for each indicator are, *i* is the number of samples, and *j* is the sample sequence number. The second stage is to determine the weight for each indicator of sensitivity/exposure (SI) and response capacity (RI) using the Analytic Hierarchy Process (AHP) method. Weighting is done using the AHP Online System application: *https://bpmsg.com/ahp/* [33]. The AHP assessment was carried out by several representatives of the Ministry of ATR/BPN officials in the regions and central government who had experience or were involved in land acquisition and participated in the survey. The weighting results are addressed to the weight columns (Tables 1 and 2).

Sensitivity/exposure	Weight	The meaning/function of the indicator
S1 Land area	0.124	Land area acquired (M2)
S2 Jobs	0.296	Whether there are family members who lost their jobs,
S3 House/residence	0.218	Did the family lose their home
S4 Marginalization	0.139	Level of family's socio-economic situation
S5 Morbidity/mortality	0.035	History of family members being sick/died in 2018 - 2022
S6 Food insecurity	0.093	Level of family difficulty in meeting the family's food needs
S7 Access to common property	0.048	Level of family in accessing common property,
S8 Social disarticulation	0.048	Level of loss social relationships with friends/neighbors

Table 1. Sensitivity / Exposure Indicators

#### Journal of Human, Earth, and Future

Response capacity	Weight	The meaning/function of the indicator
R1 Working age	0.053	Number of family members over 15 years old, (people)
R2 Graduated from junior high school	0.026	Percentage of family members who graduated from junior high school or above, (%)
R3 Living space per capita	0.026	The area of the house is compared to the number of family members, $(M^2)$
R4 Commercial property	0.125	Owning a house for commercial or business
R5 Compensation value	0.162	The amount of compensation received by the family, (Rp)
R6 Loan	0.063	The existence of loans/debts, yes (0) indicates a negative response, no positive response (1)
R7 Family	0.044	Number of relatives living in one sub-district, (household)
R8 Social relationships	0.057	Level of relationship with relatives and friends
R9 Income	0.153	Income of all family members compared to the number of family members, (Rp)
R10 Income variation	0.089	$R_{10} = \sum_{i=1}^{m} P_i \ln P_i$ where M is a type of family income, $P_i$ is the income ratio <i>i</i> to total family income
R11 Work training	0.080	Have farmers who lost their land ever participated in vocational training, yes (1) no (0)
R12 Policy awareness	0.075	Level of awareness regarding land acquisition policies
R13 Local government assistance	0.045	The level of local government concern felt after land acquisition

#### **Table 2. Response Capacity Indicators**

The vulnerability index (LVI) is defined as a function of sensitivity/exposure (SI) and response capacity (RI) to negative impacts arising from displacements due to land acquisition. Therefore, the vulnerability index is modeled as follows:

$$LVI = \frac{SI}{RI}$$
(2)

$$SI = \sum_{j=1}^{2} W_{Sj} X_{Sij} , \quad RI = \sum_{j=1}^{13} w_{Rj} X_{Rij}$$
(3)

where  $W_{Sj}$  is the weight of the sensitivity/exposure index indicator j and  $w_{Rj}$  is the weight of the response capacity index j. In contrast,  $X_{Sij}$  and  $X_{Rij}$  the values of the sensitivity/exposure and sensitivity/exposure indicators have been standardized. Obstruction analysis models are used to determine which indicators cause low response capacity [10]. The equation for deciding model obstruction is as follows:

$$A_{j} = \frac{I_{j}W_{j}}{\left(\sum_{j=1}^{n} I_{j}W_{j}\right)} \times 100\%, \qquad I_{j} = 1 - X'_{ij}, \tag{4}$$

where,  $I_j$  is The deviation index describes the gap between the j indicator value and its optimal value; the subscript base is the standardized indicator value,  $W_j$  and the j's weight indicator of the AHP results, and  $A_j$  the level of obstruction of the j indicator to the response capacity.

The SI, RI, and LVI values were analyzed using correlation analysis to determine the effect of sensitivity/exposure and response capacity on the impact of land acquisition on the livelihood vulnerability index. The Spearman Rank correlation method is used because most data is ordinal, tiered, or ranked and is not normally distributed [34].

## 2.4. Research Workflow

This research workflow is shown in Figure 2. The development of questions for the questionnaire survey is adjusted to the scope of the defined sensitivity/exposure and response capacity indicators. Test questions are carried out before being used for surveys to find out the extent of the answers obtained to the questions asked. Adjustments were made to ambiguous questions that did not get the desired feedback. After the questions were received, the expected feedback, presentation, and training using the survey formula were carried out for the officers who would survey the field. The data obtained from the household survey are used to determine LVI. Data standardization is carried out on all data before SI and RI calculations occur. The weight of each indicator is determined by determining the contribution of each indicator to the SI and RI. After the SI and RI values are calculated with the weight of each indicator, the LVI value for each sample is then calculated. Obstruction calculations, SI, RI, and LVI correlation tests were carried out to deepen the vulnerability analysis.



Figure 2. Research workflow

# 3. Results And Discussion

A total of 138 data were collected, and after screening, 125 complete samples were obtained (Table 3). The data above 100 samples is considered sufficient for descriptive research or above 50 for correlation research [35]. The questionnaire survey results were validated by comparing the data obtained with the land acquisition documents from the Ministry of ATR/BPN.

Table 3.	Recapitulation	of Respondents	(N=125)
----------	----------------	----------------	---------

Variables	%	Variables	%
Gender		Work	
Male	68.8	Farmers	24.0
Woman	31.2	Fisherman	0.0
Age		Breeder	0.8
30 and under	27.2	Laborer	6.4
31 - 40	14.4	Trader	2.4
41 - 50	21.6	Self-employed	22.4
51 - 60	32.0	Private sector employee	4.8
over 60	4.8	Civil servants	4.8
Education		Village Apparatus	7.2
Didn't graduate elementary school	1.6	Retired	6.4
Elementary school	12.6	Students	0.0
Junior high school	17.6	Housewife	16.8
High school	52.0	Doesn't work	4.0
Academy/University	16.0	Compensation utility	
Land ownership		Daily consumption	38.0
Yes	80.8	Land replacement	49.0
No	19.2	Business commercial	13.0
House ownership			
Yes	97.6		
No	2.4		

Indicators	%	Indicators	%	
<b>S1</b>		<b>S</b> 6		
< 0.5 Ha	93.6	It's really not difficult	30.4	
0.5 – 1.99 Ha	5.6	Not difficult	16.0	
2 – 2.99 Ha	0.8	Neutral	28.8	
S2		Difficult	16.8	
Yes	48.8	Very difficult	8.0	
No	51.2	\$7		
<b>S3</b>		It's really not difficult	39.2	
Yes	72.0	Not difficult	15.2	
No	28.0	Neutral	24.8	
<b>S4</b>		Difficult	16.0	
Very not good	18.4	Very difficult	4.8	
Not good	12.8	<u>\$8</u>		
Neutral	38.4	Absolutely no loss	45.6	
Good	26.4	Not losing	8.8	
Very good	4.0	Neutral	24.8	
85		Lost	11.2	
Yes	40.8	Very lost	9.6	
No	59.2			

Table 4. Recapitulation of Sensitivity/Exposure Data

# Table 5. Recapitulation of Response Capacity

Indicators	%	Indicators	%
R1		R8	
< 2	49.6	Very loose	3.2
2 - 3	24.8	Not tight	4.0
> 3	25.6	Neutral	19.2
R2		Tightly	29.6
< 2	54.4	Very tight	44.0
2 - 3	22.4	R9	
> 3	23.2	< 1.5 million	31.2
R3		1.5 million - 2.5 million	32.8
< 200	79.2	2.5 million - 3.5 million	12.0
200 - 600	20.0	> 3.5 million	24.0
> 600	0.8	R10	
R4		< 2	51.2
Yes	24.0	2 - 3	47.2
No	76.0	> 3	1.6
R5		R11	
< 0.5 M	11.2	Yes	34.4
0.5 – 1 M	36.8	No	65.6
1-2 M	32.0	R12	
> 2 M	20.0	Very clueless	21,6
R6		Do not understand	44.8
Yes	36.8	Neutral	12.0
No	63.2	Understand	5.6
<b>R7</b>		Very Understanding	16.0
< 2	45.6	R13	
2 - 8	39.2	Very indifferent	18.4
> 8	15.2	Not care	13.6
		Neutral	37.6
		Care	24.0
		Very care	6.4

634

#### Journal of Human, Earth, and Future

The sensitivity index (SI), response index (RI), and livelihood vulnerability index (LVI) are calculated using Equations 5 and 6. The average SI, RI, and LVI calculation results are 0.469, 0.260, and 2.309, respectively. To avoid the influence of sample size in the analysis, SI and RI values are in Tables 4 and 5 standardized using a z-score. The result is a standard curve with a mean value of 0 and a standard deviation of 1, 2, 3, 4, and so on [34]. Figure 3 shows a bubble chart of standardized SI values and RI values. The size of the bubble reflects the level of vulnerability of each family.

All samples can be classified into four groups based on the distribution of each vulnerability value in each quadrant. The division results based on quadrant distribution are shown in Table 1. The first has an average vulnerability index of 2.031 or medium compared to other groups. The second group has a vulnerability index of 0.810, the lowest compared to other groups. The third group has a vulnerability index of 1.842 or medium compared to different groups. The fourth has a maximum SI value and a minimum RI value. This group has the highest average vulnerability index, namely 4.282.



Figure 3. LVI variations of 125 respondents

The number of households in the high category of vulnerable groups was 39 (31.2%) families. This number is the same as households in the low vulnerability group, namely those with low SI and RI. Two groups of families with medium vulnerability are families with high SI and high RI and families with low SI but also low RI. Each group comprised 18 (14.4%) and 29 (22.4%) families (see Table 6).

C	SI		RI		LVI	[	Sample		
Group	Attribute	Mean	Attribute	Mean	Attribute	Mean	Number	%	
Ι	High	0.672	High	0.352	Middle	2.031	18	14.4	
II	Low	0.276	High	0.354	0.354 Low		39	31.2	
III	Low	0.338	Low	0.194	0.194 Middle		29	22.4	
IV	High	0.666	Low	0.174	0.174 High		39	31.2	
Total		0.469		0.260		2.309	125	100	

Table 6. Household Vulnerability Index Group

The correlation test showed that the relationship between SI, RI, and LVI is highly correlated (Table 7). SI is strongly positively correlated with LVI, with a correlation coefficient of 0.848. Meanwhile, RI has a robust negative correlation with LVI, with a correlation coefficient of -0.774. This shows that the modified LVI model describes the level of livelihood vulnerability.

Correlations												
			LVI	SI	RI							
	INI	Correlation Coefficient	1	0.848**	-0.774**							
	LVI	Sig. (2-tailed)	-	0	0							
6 I I	CI.	Correlation Coefficient	0.848**	1	-0.363**							
Spearman's rho	51	Sig. (2-tailed)	0	-	0							
	DI	Correlation Coefficient	-0.774**	-0.363**	1							
	КI	Sig. (2-tailed)	0	0	-							

\*\* Correlation is significant at the 0.01 level (2-tailed).

# **3.1. Impact of Land Acquisition**

Correlation analysis shows that the eight impacts of land acquisition are almost entirely related (Table 8), except for job losses (S2). These interrelated impacts align with what Field [5] states.

	Correlations												
			<b>S1</b>	S2	<b>S</b> 3	<b>S4</b>	<b>S</b> 5	<b>S6</b>	<b>S7</b>	<b>S8</b>	SI		
	61	Correlation Coefficient	1	0.17	0.057	-0.214*	0.132	-0.095	-0.139	-0.016	0.131		
	51	Sig. (2-tailed)	-	0.058	0.53	0.017	0.141	0.291	0.122	0.857	0.145		
	63	Correlation Coefficient	0.17	1	0.145	0.083	0.101	0.154	0.124	-0.061	0.816**		
	52	Sig. (2-tailed)	0.058	-	0.106	0.359	0.261	0.086	0.169	0.496	0		
	62	Correlation Coefficient	0.057	0.145	1	0.045	-0.207*	0.148	-0.01	0.12	0.554**		
	33	Sig. (2-tailed)	0.53	0.106	-	0.617	0.02	0.099	0.914	0.184	0		
	64	Correlation Coefficient	-0.214*	0.083	0.045	1	-0.051	0.263**	0.153	0.084	0.315**		
oų	54	Sig. (2-tailed)	0.017	0.359	0.617	-	0.569	0.003	0.089	0.351	0		
an's	85	Correlation Coefficient	0.132	0.101	-0.207*	-0.051	1	0.014	-0.049	0.025	0.059		
arm	33	Sig. (2-tailed)	0.141	0.261	0.02	0.569	-	0.879	0.587	0.781	0.516		
Spe	56	Correlation Coefficient	-0.095	0.154	0.148	0.263**	0.014	1	0.499**	0.433**	0.445**		
	30	Sig. (2-tailed)	0.291	0.086	0.099	0.003	0.879	-	0	0	0		
	\$7	Correlation Coefficient	-0.139	0.124	-0.01	0.153	-0.049	0.499**	1	0.625**	0.303**		
	5/	Sig. (2-tailed)	0.122	0.169	0.914	0.089	0.587	0	-	0	0.001		
	60	Correlation Coefficient	-0.016	-0.061	0.12	0.084	0.025	0.433**	0.625**	1	0.219*		
	30	Sig. (2-tailed)	0.857	0.496	0.184	0.351	0.781	0	0	-	0.014		
	EI.	Correlation Coefficient	0.131	0.816**	0.554**	0.315**	0.059	0.445**	0.303**	0.219*	1		
	51	Sig. (2-tailed)	0.145	0	0	0	0.516	0	0.001	0.014	-		

	Fable 8.	Sensitivity	Indicators	Correlation	Test	Results
--	----------	-------------	------------	-------------	------	---------

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

Most people could get replacement land using the compensation money they received (80.8%). This number exceeds data on the use of compensation money for replacement land, which was only 49% of the total respondents (Table 3). That means that around 31.8% of respondents' land is only partially subject to land acquisition or still has residual land. That explains why the land area acquired does (S1) not correlate with accumulated impacts (SI). However, the reduction in the area of land owned not only affects social and cultural status but also reduces the sense of security, reduced speculation/reserve assets, and the choice of livelihood strategy for the younger generation to return home and live in the village to become farmers [36, 37]. The area of land taken over (S1) better reflects the decline in the sense of security as indicated by the negative correlation with socio-economic conditions (S4).

Statistical tests cannot fully explain the relationship between the impact of job loss (S2) and the other seven impacts. That shows that other impacts do not influence the effect of land acquisition on job losses. However, job loss is the factor most strongly related to the accumulated impact of land acquisition on families (SI). Losing a family member's job will reduce the family's variety of jobs (R10). Family groups with low job variation have a low response index (RI), resulting in a high vulnerability index. Job losses are experienced by farmers and business owners whose land was taken over and business owners who lose customers in home industries and homestays. Some female respondents (31.2%) complained about the loss of income from selling crops, such as Melinjo and Papaya, which previously grew abundantly all year round and could support kitchen needs.

In addition, changes in jobs experienced by the community are the cause of changes in the amount of income obtained. The change from the agricultural sector to the business or trade sector caused the community to experience a decrease in income. The decrease in income was caused by the large amount of land that became the location for airport construction, so people turned to becoming farm laborers or traders. That is because before being affected by the airport, people worked as farmers for decades and are currently working as casual laborers due to the loss of land. People only receive education once graduating from junior high school, so they need to gain skills [38].

Respondents who lost their homes (S3) were 72%, but 97.6% of respondents had a home after land acquisition. The relocation program and compensation money have increased the rate of home ownership. However, losing a house (S3) negatively correlates with a history of illness/death after land acquisition (S5). Since 2018, 40.8% of respondents stated that at least one family member was sick or died. Respondents who lost their homes tended not to

#### Journal of Human, Earth, and Future

have a history of illness/death after land acquisition. Families who previously lived in a jointly owned house or someone else's and, after land acquisition, were able to own their own home were more likely to have a history of illness/death. It could be because the compensation money received was intended for building a house and may have caused other priority health-related needs to be slightly neglected. However, conclusions about the relationship between losing a home and a history of illness/death are still very premature, considering the limited data and complexity of public health status due to the COVID-19 pandemic.

As many as 31.2% of respondents stated that the socio-economic conditions of their families after land acquisition (S4) were quite good. Two things that correlated with the marginalization process felt by respondents were the area of land acquired (S1) and food security (S6). As many as 24.8% of respondents stated that meeting food needs became more complex or burdensome after land acquisition. Agricultural land is not only a source of livelihood but also has cultural values such as social status. That shows that the presence of airport construction encourages new jobs for active and creative residents and increased income. Meanwhile, residents with little energy and creativity in managing the situation will not feel the impact on their income. People who are open-minded and take advantage of opportunities around them will increase their income faster [39]. Meanwhile, for families who experience a decline in socio-economic conditions, it is closely related to compensation money, which is only enough to meet consumption needs (38.4%).

As many as 20.8% of respondents stated that land acquisition had complicated access to public property. Changes in access to public property (S7) are closely related to the area of land acquired (S1) and food security (S6). Beach access is the most widespread impact of changes in public property access following the airport's construction. Beaches as tourist destinations provide business opportunities, generally through stalls and accommodation. The loss of a place of business impacts the family's ability to meet basic daily needs; apart from providing a business place, the area where the plane is based, especially near the beach, used to be a place for shrimp farming [29]. The existence of shrimp kola not only drives the economy but provides food rich in nutrients.

The final impact of the eight interrelated impacts is the disintegration of social relations in the community (S8). Even though the relocation program has provided relocation places in their villages of origin, as many as 20.8% of respondents reported a loss or extreme loss of social closeness. Social disintegration is correlated with loss of access to common property (S6) and food security (S8). Agricultural activities in the village are an economical source of food or income and a means of socializing. Likewise, food stalls, inns, or pond businesses on the coast are steeped in close relationships with one another. A loss of closeness accompanies the loss of a place of business.

# 3.2. Land Acquisition Impact Response Capacity

Response capacity is a livelihood strategy closely related to the level of welfare. However, the correlation test results show that only commercial property ownership (R4) strongly correlates with response capacity. Other indicators contribute very little or weakly, except for the size of the house per capita (R3) and the number of siblings (R7), which are not correlated with the response capacity index (RI).

The number of working-age family members (R1) is negatively correlated with house size per capita (R3) and family income per person (R9). That could be because only some family members are productive, either because they have yet to reach working age, are no longer productive, or are not working. The correlation between education quality (R2) with house area per capita (R3) and compensation value (R5) reveals that there is a gap in education quality between owners of high-value assets and owners of low-value assets, which may have existed long before land acquisition. The correlation test also shows that the quality of education significantly affects family income (R9).

Variations in house size, such as luxury homes, are correlated with a significant compensation value. Building large or even luxurious houses is counterproductive to the concept of compensation, which is intended to replace housing and restore livelihoods. That is confirmed by the negative correlation of house area per capita (R3) with understanding land acquisition policy's meaning, significance, and broad objectives (R12). Families with a good understanding of land acquisition (R12) tend to invest in commercial property (R4). A large house area per capita (R3) is generally owned by families with permanent jobs that provide high salaries, such as civil servants or private employees. That is indicated by a negative correlation with job variation (R10) and a positive correlation with income (R9).

Commercial property ownership (R4) is correlated with an understanding of land acquisition (R12) and family income (R9). That means that commercial property ownership supports family income or that commercial property ownership can only be realized by families with a stable income. That explains the low ownership of commercial property among respondents, only 24%. Even commercial property ownership does not correlate with compensation value (R5). Commercial property ownership has not been an attraction for recipients of large sums of compensation. That could be because the family feels they have sufficient income (R9), so they prefer to use the compensation money for replacement land or something else. Building a more spacious or luxurious house is also more of an option than building/buying commercial property (Table 9). That is indicated by the positive correlation between the compensation value (R5), house area (R3), and income (R9).

**Table 9. Response Indicators Correlation Test Results** 

Correlation																
_			R1	R2	R3	R4	R5	R6	<b>R7</b>	R8	R9	R10	R11	R12	R13	RI
_	R1	Correlation Coefficient	1	0.281**	-0.312**	0.07	-0.019	0.048	0.04	0.065	-0.196*	0.260**	0.08	0.023	-0.036	0.189*
		Sig. (2-tailed)	-	0.002	0	0.437	0.833	0.594	0.662	0.472	0.028	0.003	0.375	0.798	0.693	0.035
_	R2	Correlation Coefficient	0.281**	1	0.237**	0.131	0.201*	0.054	-0.07	0.015	0.373**	-0.04	-0.039	0.136	0.052	0.198*
		Sig. (2-tailed)	0.002	-	0.008	0.144	0.025	0.552	0.435	0.872	0	0.655	0.669	0.13	0.565	0.027
	R3	Correlation Coefficient	312**	0.237**	1	0.136	0.289**	0.115	-0.166	-0.099	0.453**	-0.246**	-0.068	-0.176*	0.115	0.075
		Sig. (2-tailed)	0	0.008	-	0.132	0.001	0.2	0.065	0.274	0	0.006	0.45	0.05	0.203	0.403
	R4	Correlation Coefficient	0.07	0.131	0.136	1	0.147	0.002	0.098	0.115	0.237**	0.072	-0.013	0.283**	0.08	0.658**
		Sig. (2-tailed)	0.437	0.144	0.132	-	0.101	0.986	0.275	0.203	0.008	0.422	0.889	0.001	0.372	0
	R5	Correlation Coefficient	-0.019	0.201*	0.289**	0.147	1	0.145	0.023	0.029	0.253**	0.049	-0.059	0.165	0.094	0.323**
		Sig. (2-tailed)	0.833	0.025	0.001	0.101	-	0.106	0.798	0.75	0.004	0.591	0.511	0.065	0.296	0
	R6	Correlation Coefficient	0.048	0.054	0.115	0.002	0.145	1	-0.057	0.205*	-0.003	0.01	0.029	-0.15	-0.004	0.383**
		Sig. (2-tailed)	0.594	0.552	0.2	0.986	0.106	-	0.528	0.022	0.978	0.915	0.75	0.095	0.964	0
rho	R7	Correlation Coefficient	0.04	-0.07	-0.166	0.098	0.023	-0.057	1	0.290**	-0.085	0.071	-0.109	0.035	0.1	0.138
an's		Sig. (2-tailed)	0.662	0.435	0.065	0.275	0.798	0.528	-	0.001	0.348	0.43	0.225	0.698	0.266	0.124
pearm	R8	Correlation Coefficient	0.065	0.015	-0.099	0.115	0.029	0.205*	0.290**	1	0.073	-0.005	-0.134	-0.009	0.056	0.265**
S.		Sig. (2-tailed)	0.472	0.872	0.274	0.203	0.75	0.022	0.001	-	0.419	0.957	0.137	0.923	0.535	0.003
	R9	Correlation Coefficient	-0.196*	0.373**	0.453**	0.237**	0.253**	-0.003	-0.085	0.073	1	-0.174	-0.091	0.155	0.17	0.220*
_		Sig. (2-tailed)	0.028	0	0	0.008	0.004	0.978	0.348	0.419	-	0.052	0.313	0.085	0.058	0.014
	R10	Correlation Coefficient	.260**	-0.04	-0.246**	0.072	0.049	0.01	0.071	-0.005	-0.174	1	0.101	0.193*	0.057	0.297*
_		Sig. (2-tailed)	0.003	0.655	0.006	0.422	0.591	0.915	0.43	0.957	0.052	-	0.26	0.031	0.526	0.001
	R11	Correlation Coefficient	0.08	-0.039	-0.068	-0.013	-0.059	0.029	-0.109	-0.134	-0.091	0.101	1	0.115	-0.032	0.402**
_		Sig. (2-tailed)	0.375	0.669	0.45	0.889	0.511	0.75	0.225	0.137	0.313	0.26	-	0.202	0.721	0
	R12	Correlation Coefficient	0.023	0.136	-0.176*	0.283**	0.165	-0.15	0.035	-0.009	0.155	0.193*	0.115	1	0.103	0.460**
		Sig. (2-tailed)	0.798	0.13	0.05	0.001	0.065	0.095	0.698	0.923	0.085	0.031	0.202	-	0.253	0
_	R13	Correlation Coefficient	-0.036	0.052	0.115	0.08	0.094	-0.004	0.1	0.056	0.17	0.057	-0.032	0.103	1	0.221*
_		Sig. (2-tailed)	0.693	0.565	0.203	0.372	0.296	0.964	0.266	0.535	0.058	0.526	0.721	0.253	-	0.013
-	RI	Correlation Coefficient	0.189*	0.198*	0.075	0.658**	0.323**	0.383**	0.138	0.265**	0.220*	0.297*	0.402**	0.460**	0.221*	1
		Sig. (2-tailed)	0.035	0.027	0.403	0	0	0	0.124	0.003	0.014	0.001	0	0	0.013	-

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Income (R9) is a complex post-land acquisition response. Good income is associated with education level (R2), commercial property ownership (R4), and compensation value (R5). However, a good income means nothing if the burden borne by family members is more significant than that of productive ones. Family occupational variation (R10) does not indicate family income (R9). Higher education tends to lead to permanent jobs with good income, such as entrepreneurs (22.4%), private employees (4.8%), and retirees/government employees (18.4%). Farmers (24%) and laborers (6.4%), whose income tends to be low and unstable, must do more than one job to meet their family's needs.

Job/business training (R11) and government awareness (R13) have not correlated with other response indicators, including income and job variations, indicating that the government's efforts to restore post-land acquisition community livelihoods have not been optimal. That is partly because many people hope to work at the airport, but the vacancies are limited. Complaints from affected communities regarding job opportunities at the airport, which were considered mere promises, confirmed these results.

# 3.3. Post-Land Acquisition Livelihood Vulnerability Index

The five obstacle factors and the degree of obstruction for families with low RI, groups III and IV, showed a similar pattern (Table 10). Overall, there is low response capacity due to the high degree of obstruction on response value of compensation (R5), income per person in the family (R9), commercial property ownership (R4), variations in family income sources (R10), and job training (R11). The order of the degree of obstruction is proportional to the weight of the response capacity resulting from the AHP response capacity (Table 2). More than half of the respondents indicated that the value of compensation is closely related to response capacity. However, the compensation will be proportional to the assets taken over in land acquisition. There are only so many efforts to increase response capacity through the compensation value factor other than ensuring that the compensation value is provided fairly and appropriately for each entitled party. In contrast to income, commercial property ownership, variations in income sources, and job training, many efforts can still be improved to increase response capacity.

No.	Low RI Household		Group III		Group IV	
	Obstacle factors	Obstacle degree	Obstacle factors	Obstacle degree	Obstacle factors	Obstacle degree
1	R5	0.187	R5	0.191	R5	0.185
2	R9	0.183	R9	0.185	R9	0.183
3	R4	0.151	R4	0.150	R4	0.152
4	R10	0.096	R10	0.098	R10	0.095
5	R11	0.082	R11	0.093	R11	0.075

Table 10.	Obstacle	factors a	nd the f	ive highest	degrees o	f obstruction
				0		

That shows that development should be carried out to improve the living standards, often measured by high and low income and increased productivity. The airport is a center of activity with an attraction that triggers changes and development in the area around the airport [40]. In addition, the social dimension must be considered in airport development for perfect sustainability. Social factors play a significant role because they involve the community in it. The construction of YIA takes up quite a large area, which has undoubtedly shifted some agricultural land during its acquisition. Agricultural land should be a source of livelihood for the community. Therefore, this dimension needs special attention for sustainable development, as expected [41, 42]. Opportunities for job access are also essential; the airport must open up more opportunities for the community to acquire land to increase income.

# 4. Conclusion

The decrease in the land area for farmers impacts socio-cultural status. It reduces the sense of security, asset reserves, and the choice of livelihood strategies for the younger generation to return home and live in the village as farmers. The land area taken over reflects the decreased security indicated by the negative correlation with socioeconomic conditions due to land acquisition. That could be because the compensation money received was intended to build a house and may have caused other health-related priority needs to be slightly neglected. On the other hand, commercial property ownership could be more attractive to recipients of large amounts of compensation. That could be because families feel they have enough income, so they prefer to use the compensation money for replacement land or other things. Building a larger or more luxurious house is also better than building/buying commercial property. Therefore, this study tries to build a vulnerability index model due to land acquisition, especially for families who have to be relocated. Eight potential forced displacements are used as indicators of exposure/sensitivity of families affected by land acquisition. The economic and sociological approach allows the vulnerability index model to reveal the economic, social, and cultural impacts the affected community feels after ten years of land acquisition. More existing airport land acquisition impact research needs to be conducted, which focuses only on socio-economic or cultural issues. The eight indicators used have shown the impact of land acquisition on five livelihood assets: natural, physical, labor, social, and financial. This research reinforces the need for better social impact assessment and management policies in Indonesia.

# 5. Declarations

# **5.1.** Author Contributions

Conceptualization, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; methodology, E.S., J.W., E.S., and Z.A.; formal analysis, E.S., J.W., E.S., and Z.A.; investigation, E.S., S.F.A., M.N., and E.S.; data curation, E.S. and J.W.; writing—original draft preparation; E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., J.W., E.S., S.F.A., M.N., and Z.A.; writing—review and editing, E.S., A., M.N., and Z.A.; writing—review and editing, E.S., M.S., and J.W. and and and and analysis, E.S., and J.W. and analysis, E.S., B.S., and A.S., and J.W. and analysis, E.S., and A.S., and A.S

#### 5.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

#### 5.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

#### 5.4. Institutional Review Board Statement

Not applicable.

## 5.5. Informed Consent Statement

Not applicable.

# 5.6. Declaration of Competing Interest

The authors declare that there are no conflicts of interest concerning the publication of this manuscript. Furthermore, all ethical considerations, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

# **6. References**

- Davidson, J. S. (2018). 7. Eminent domain and infrastructure under the Yudhoyono and Widodo administrations. Land and Development in Indonesia, 167–185. doi:10.1355/9789814762106-012.
- [2] Salim, W., & Negara, S. D. (2018). Infrastructure development under the Jokowi administration progress, challenges and policies. Journal of Southeast Asian Economies, 35(3), 386–401. doi:10.1355/ae35-3e.
- [3] Yoshino, N., Parinduri, R. A., & Oishi, Y. (2019). Attitudes toward land acquisition in Indonesia. Land Acquisition in Asia: Towards a Sustainable Policy Framework, 57–79. doi:10.1007/978-981-13-6455-6\_5.
- [4] PBS. (2013). Sensus Pertanian 2013 (ST2013). Badan Pusat Statistik (BPS Statistics Indonesia), Jakarta, Indonesia.
- [5] Cernea, M. M. (2021). The risks and reconstruction model for resettling displaced populations. Social Development in the World Bank, 235–264. doi:10.1007/978-3-030-57426-0\_16.
- [6] Demmallino, E. B., Ibrahim, T., & Karim, A. (2018). Farmers in the Middle of the Mining: A Phenomenological Study of the Effects of Policy Implementation on the Lives of Farmers in Morowali. Jurnal Sosial Ekonomi Pertanian, 14(2), 161. doi:10.20956/jsep.v14i2.4276.
- [7] Tuan, N. T. (2021). The consequences of expropriation of agricultural land and loss of livelihoods on those households who lost land in da Nang, Vietnam. Environmental and Socio-Economic Studies, 9(2), 26–38. doi:10.2478/environ-2021-0008.
- [8] Adger, W. N. (2006). Vulnerability. Global Environmental Change, 16(3), 268–281. doi:10.1016/j.gloenvcha.2006.02.006.
- [9] Brochmann, M. (2008). Measuring Vulnerability to Natural Hazards: Towards Disaster Resilient Societies. New York: United Nations University Press. doi:10.1177/00223433080450010802.
- [10] Huang, X., Huang, X., He, Y., & Yang, X. (2017). Assessment of livelihood vulnerability of land-lost farmers in urban fringes: A case study of Xi'an, China. Habitat International, 59, 1–9. doi:10.1016/j.habitatint.2016.11.001.
- [11] Yang, X., Guo, S., Deng, X., Wang, W., & Xu, D. (2021). Study on livelihood vulnerability and adaptation strategies of farmers in areas threatened by different disaster types under climate change. Agriculture (Switzerland), 11(11), 1088. doi:10.3390/agriculture11111088.
- [12] Zeng, X., Guo, S., Deng, X., Zhou, W., & Xu, D. (2021). Livelihood risk and adaptation strategies of farmers in earthquake hazard threatened areas: Evidence from Sichuan province, China. International Journal of Disaster Risk Reduction, 53, 101971. doi:10.1016/j.ijdrr.2020.101971.
- [13] Thomas, K., Hardy, R. D., Lazrus, H., Mendez, M., Orlove, B., Rivera-Collazo, I., Roberts, J. T., Rockman, M., Warner, B. P.,
  & Winthrop, R. (2019). Explaining differential vulnerability to climate change: A social science review. Wiley Interdisciplinary Reviews: Climate Change, 10(2), 565. doi:10.1002/wcc.565.
- [14] Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. Global Environmental Change, 16(3), 293–303. doi:10.1016/j.gloenvcha.2006.02.004.
- [15] Zhan, S. (2019). Accumulation by and without dispossession: Rural land use, land expropriation, and livelihood implications in China. Journal of Agrarian Change, 19(3), 447–464. doi:10.1111/joac.12304.

- [16] Kan, K. (2019). Accumulation without Dispossession? Land Commodification and Rent Extraction in Peri-urban China. International Journal of Urban and Regional Research, 43(4), 633–648. doi:10.1111/1468-2427.12746.
- [17] Aji, S. B., & Khudi, A. F. (2021). Indonesia's National Strategic Project, Displacement, and the New Poverty. Journal of Southeast Asian Human Rights, 5(2), 136–153. doi:10.19184/jseahr.v5i2.23399.
- [18] Rijanta, R., Baiquni, M., Rachmawati, R., & Musthofa, A. (2022). Relocations of the households affected by the development of the New Yogyakarta International Airport, Indonesia: problems and livelihood prospects. Human Geographies, 16(2), 191– 209. doi:10.5719/hgeo.2022.162.5.
- [19] Farid, A. H., Andari, D. W. T., Aisiyah, N., Junarto, R., & Mujiburohman, D. A. (2023). Social Impacts and Resettlement: Land Acquisition for Yogyakarta International Airport. Russian Law Journal, 11(3), 1214-1220. doi:10.52783/rlj.v11i3.1534.
- [20] Guild, J. (2019). Land acquisition in Indonesia and law No. 2 of 2012 (No. 1036). ADBI Working Paper Series, Asian Development Bank Institute (ADBI), 1036.
- [21] Kulon Progo Regency (2023). Resettlement and Economic Recovery Program for Communities Affected by Land Acquisition for Airport in Kulon Progo. Pemerintah Kabupaten Kulon Progo, Yogyakarta, Indonesia.
- [22] Angkasa Pura (2013), Land Acquisition Planning Document: For the Construction of a New Airport in DIY, PT. Angkasa Pura I (Persero), Jakarta, Indonesia.
- [23] BPS. (2013), Kabupaten Kulon Progo Dalam Angka 2013. Badan Pusat Statistik (BPS Statistics Indonesia), Jakarta, Indonesia.
- [24] Nurpita, A., Wihastuti, L., & Andjani, I. Y. (2018). The Impact of Land Conversion on Food Security of Farming Households in Temon District, Kulon Progo Regency. Jurnal Gama Societa, 1(1), 103. doi:10.22146/jgs.34055.
- [25] Salim, M. N. (2020). Peer Review Ends in Temon: Long Debate on Land Acquisition for Yogyakarta International Airport (YIA), Yogyakarta, Indonesia.
- [26] Isworo, E. (2023). The Social Impacts of Large-Scale Land Acquisition on Local Communities Livelihood. The Case of New Yogyakarta International Airport, Indonesia, Doctoral dissertation, Yogyakarta, Indonesia.
- [27] Rijanta, R., Baiquni, M., & Rachmawati, R. (2019). Patterns of Livelihood Changes of the Displaced Rural Households in the Vicinity of New Yogyakarta International Airport (NYIA). Proceedings of the International Conference on Rural Studies in Asia, 259-263. doi:10.2991/icorsia-18.2019.63.
- [28] Edita, E. P. (2019). Aerotropolis: At What Cost, to Whom? An Analysis of Social and Environmental Impacts of New Yogyakarta International Airport (NYIA) project, Indonesia. In Master Thesis Series in Environmental Studies and Sustainability Science. Lund University, Lund, Sweden.
- [29] Rachman, F., Satriagasa, M. C., & Riasasi, W. (2018). Economic impact studies on development project of New Yogyakarta International Airport to aquaculture in Kulonprogo Coastal. IOP Conference Series: Earth and Environmental Science, 139(1), 12037. doi:10.1088/1755-1315/139/1/012037.
- [30] Kustiningsih, W. (2017). Vulnerable Groups in the Development of the Airport City Area in Kulon Progo: A Case Study of the New Yogyakarta International Airport (NYIA). Jurnal Pemikiran Sosiologi, 4(1), 91. doi:10.22146/jps.v4i1.23632.
- [31] Heron, H., & Kim, M. S. (2023). Between chili farms and an aerotropolis: the struggle against the new airport in Yogyakarta, Indonesia. South East Asia Research, 31(1), 51–71. doi:10.1080/0967828X.2023.2208371.
- [32] Katherine, A. B., & Kimberly, N. H. (2017). The Likert Scale What It Is and How to Use It. Phalanx, 50(2), 32–39.
- [33] Goepel, K. (2018). Implementation of an online software tool for the Analytic Hierarchy Process (AHP-OS). International Journal of the Analytic Hierarchy Process, 10(3), 469–487. doi:10.13033/ijahp.v10i3.590.
- [34] Sugiyono (2023). Statistics for Research (Statistika Untuk Penelitian). Alfabeta, Bandung, Indonesia
- [35] Hyun, H. (2014). How to design and evaluate research in education. McGraw-Hill, New York, United States.
- [36] Neilson, J. (2018). Agrarian transformations and land reform in Indonesia. Land and Development in Indonesia, 245–264. doi:10.1355/9789814762106-016.
- [37] Heger, I. (2020). More than "Peasants without Land": Individualisation and Identity Formation of Landless Peasants in the Process of China's State-Led Rural Urbanisation. Journal of Current Chinese Affairs, 49(3), 332–356. doi:10.1177/1868102620915000.
- [38] Rizky, R. A. (2017). The Impact of the Development of Yogyakarta International Airport (YIA) on the Economic Conditions of the Community in Bapangan Hamlet, Glagah Village, Temon District, Kulon Progo Regency. Jurnal Sains Dan Seni ITS, 6(1), 51–66.

- [39] Ramadhan, M. N., Rista, D., Bodu, K. U. S., Dominic, R., & Pristiani, Y. D. (2024,). Social and Economic Impacts of Grogol Village Community Due to the Development of Kediri Airport as Social Learning. Proceedings of the National Seminar on Health, Science and Learning, 3(1), 405-411.
- [40] Nurkholidah, A. F., & Pratiwi, P. H. (2020). Socio-Economic Impact of Yogyakarta International Airport Development on Purworejo Community. DIMENSIA: Jurnal Kajian Sosiologi, 9(1), 46–58. doi:10.21831/dimensia.v9i1.38930.
- [41] Khujjah, F. I., Puteri, C. A. M. S., Pujiati, A., & Prajanti, S. D. W. (2024). The Impact of Yogyakarta International Airport on Sustainable Economy in Kulon Progo. Jurnal Ekonomi Manajemen, 28(4), 1–6.
- [42] Purbawa, Y. (2022). The Effect of Financial Compensation for Farmland Acquisition on Household Welfare: the Yogyakarta International Airport Development Case. Journal of Indonesian Economy and Business, 37(2), 188–200. doi:10.22146/jieb.v37i2.1499.