

Article

Development-Induced Impacts on the Livelihoods of Displaced Communities: The Case of Bole Lemi Industry Park, Addis Ababa, Ethiopia

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Abstract: Livelihood encompasses the resources and capabilities that individuals and households utilize to ensure their survival and to enhance their well-being. This study examined the impact of the Bole Lemi Industry Park on livelihood systems in Addis Ababa, Ethiopia. It focused on how the establishment of the industrial park affected the livelihoods of displaced communities. A survey was conducted on 379 household heads who were displaced by the industrial park, ensuring representation across various factors such as gender, marital status, education level, ethnic group, and religion. Descriptive statistics, including frequency counts, mean values, standard deviations, and percentages, were used to analyze the data. Multiple linear regression models were employed to investigate how socioeconomic variables predicted the household heads' annual income before and after the establishment of the park. The findings revealed that 84% of the household heads said that the BLIP has hurt their livelihoods. The majority of respondents (69%) became jobless as a result of the BLIP. Another 16% transitioned to urban lifestyles, while 7.3% shifted to semi-agrarian and 5.6% to trade and services. This study identified the balance gap between industrial development and the interests of local farming communities, and how it failed to ensure sustainable livelihoods. It is recommended that development projects in Addis Ababa prioritize the affected communities by offering compensation, support for resettlement, and opportunities for livelihood diversification. Taking a comprehensive and participatory approach to industrial park development is crucial for achieving sustainable and equitable economic growth while safeguarding the well-being of local communities.

Keywords: livelihood; Bole Lemi Industry Park; displaced communities; sustainable livelihoods; Addis Ababa



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1. Introduction

Livelihoods refer to the ways individuals and families adapt to meet their basic needs [1]. The term “livelihood” commonly refers to the capacity and resources individuals and households utilize to develop strategies for their survival and well-being [2]. It is a comprehensive concept that encompasses both the actions people take and the outcomes they achieve in order to sustain themselves, such as earning a living or supporting their families. This perspective assumes that humans actively design and implement strategies for survival [3,4].

According to Moran et al. [5], a livelihood asset refers to something owned that has the potential to yield future benefits for sustaining livelihoods. The concept of a livelihood asset is fundamental to the sustainable livelihood approach, which focuses on the assets impoverished individuals need to maintain a sufficient income [6]. Livelihood strategies

encompass the actions and choices individuals make to achieve their livelihood objectives [7]. Economic, social, and environmental factors can drive households to diversify their livelihoods [8]. Livelihood diversification plays a crucial role in managing risks as it enables families to mitigate the impacts of economic instability or fluctuations [9,10]; achieve higher and more stable income levels [11–13]; engage in a process where rural households develop a range of activities and social support mechanisms through which to enhance their survival and improve their quality of life [7]; gain prominence in long-term poverty reduction strategies [14]; and typically involve a shift away from relying solely on farming income [15].

A sustainable livelihood refers to the ability of a system to maintain or expand its resources and capabilities over time, without depleting the natural resource base [16]. It entails finding a balance between human needs for natural resources and the environment's capacity to continuously provide those resources [16]. Farrington et al. [17] explore the application of sustainable livelihood approaches (SLAs) in urban areas, emphasizing the assets required by impoverished individuals to sustain an adequate income [6]. This concept has been widely used in international development to assess household sustainability [18,19]. The importance of a holistic approach is emphasized by Farrington et al. [17], whereby social, economic, political, and environmental factors were considered as components of urban livelihoods. The Sustainable Livelihoods Framework (SLF), developed by the UK Department for International Development (DFID), serves as an analytical tool through which to understand how people establish and maintain their livelihoods—incorporating property, means of living, livelihood context, and vulnerability to shocks and pressures [20]. The SLF is based on five types of assets: social (e.g., groups), human (e.g., individual skills), natural (e.g., land), financial (e.g., income), and physical resources (e.g., infrastructure) [5]. These assets, as per the livelihood model, help individuals cope with displacement shocks [21,22] and complement each other [23]. The SLF identifies the key factors influencing livelihoods, along with the relationships between them (Natarajan et al., 2022) [24]. It acknowledges the influence of vulnerability settings, policies, and institutions on people's assets [21].

Industrialization, despite creating opportunities, can also adversely affect people's livelihoods [21,25]. Displacement can disrupt household income and necessitate the liquidation of significant assets (Arhin, 2022) [6]. There is a common belief that this transformation will steer households away from land-based livelihoods toward market-oriented activities [26,27]. Land, being the most crucial natural resource for humanity [28,29], directly and indirectly supports livelihoods. It serves as a tangible natural asset employed in production [16]. Access to arable land holds immense importance in the lives of millions of people in Sub-Saharan Africa. However, access to this critical resource has been diminishing in many countries, particularly among marginalized rural populations [26].

Large-scale development projects often involve relocating residents, resulting in physical displacement [30], which can have either temporary or permanent effects on their livelihoods or income-generating activities and is known as economic displacement [31]. Land holds immense significance for many individuals, with 'land is life' being a common sentiment [32], and people worldwide have varying degrees of attachment to their respective places [30]. Consequently, land acquisition for projects, as well as the subsequent displacement and disruption, can cause substantial harm [33]. Relocated individuals experience various impacts due to their unique capacities and interests [34,35].

Urbanization often accompanies industrialization, leading to unavoidable expansions at the outskirts of cities [36]. The Ethiopian government established the Industrial Parks Development Corporation (IPDC) in 2014 with a mandate to develop, promote, and manage the development of industrial parks in Ethiopia. The IPDC provides a variety of services to investors, including land allocation, infrastructure development, and business support. Industrial park development has the potential to be a major driver of economic growth and development in Ethiopia. However, the current legal framework for industrial parks in Ethiopia is inadequate and does not provide clear rules on regulatory objectives, location decisions, investor selection, and land acquisition procedures [37]. This has led to a number

of problems, including the lack of clear rules on location decisions, the lack of clear rules on investor selection, and the lack of clear rules on land acquisition procedures.

The Ethiopian government has been promoting the development of industrial parks to attract foreign and domestic investors, and to help create jobs and boost economic growth in Ethiopia. The government established the Industrial Parks Development Corporation (IPDC) in 2014 under the Council of Ministers Regulation No. 326/2014 to oversee the development of industrial parks. As of 2023, there are a total of 24 industrial parks in Ethiopia, of which 17 are government-owned. Among them is the BLIP in Addis Ababa. Yet, in Ethiopia, industrialization, urbanization, and economic advancements have occurred in the past two decades, thereby causing a shift in livelihoods from farming to non-farming sectors across the country. The main idea of the Ethiopia's Industry Development Strategy is to promote agricultural-led industrialization, export-led development, and the expansion of labor-intensive industries. This strategy aims to increase the share of the industry sector in GDP from 13% to 27% by 2025, and the share of the manufacturing sector in GDP from 4% to 17% by 2025 [38]. However, the establishment of industrial parks has resulted in the displacement of local communities from their original areas. This development poses potential impacts such as household relocations and changes in livelihoods, including the loss of farmland and subsequent income reduction, potentially affecting food security. This study examines the consequences of industrialization on farmers who have experienced the loss of agricultural lands, making them victims of the industrialization process. Such outcomes have social and environmental implications [30].

This study explores the changes, caused by the development of the Bole Lemi Industry Park on the outskirts of Addis Ababa, to farming livelihoods in the Bole Lemi area. The study aims to assess the impacts of the establishment of the Bole Lemi Industry Park on the livelihoods of displaced communities in Addis Ababa, Ethiopia.

2. Materials and Methods

2.1. Description of the Study Area/Study Site

Addis Ababa, the capital city of Ethiopia, is situated in the horn of Africa and spans an area of 540 km². The city is located on the elevated plateaus of central Ethiopia, surrounded by the North–South oriented mountain systems adjacent to the Great Rift Valley. Addis Ababa is positioned at latitude 8°2'48" and longitude 38°45'0" [39]. As the largest city in Ethiopia, Addis Ababa has experienced significant urban growth characterized by rapid urbanization and industrialization [40].

Addis Ababa is located at an altitude ranging from 1800 m at the Akaki plains to 3200 m above sea level at Mt. Entoto. The city's topography is characterized by rugged terrain with typical volcanic features. The central part of the city has gentle and rolling landscapes with scattered hills, while the southern and southeastern areas are predominantly flat. The average annual temperatures in Addis Ababa range from 9 °C to 24 °C [41]. The study area has a tropical climate with bimodal rainfall. The average annual rainfall is 1178 mm, with the highest precipitation occurring from June to mid-September, and a relatively smaller amount from mid-February to mid-April. The annual rainfall ranges between 1000–1880 mm, and the annual temperature ranges from 20 to 25.6 °C. The population of Addis Ababa has experienced rapid and uncontrolled growth, with a 100% increase over the past two decades. The 2007 census estimated the population at 2.8 million inhabitants, but the City Structure Plan Office has projected a current population of approximately 4.5 million [40].

The Bole Lemi Industry Park (BLIP) is situated in the southeastern outskirts of Addis Ababa, approximately 15–20 km away from the city center. It is specifically located in the Lemi Kura sub-city at coordinates 8°58'17.2200" latitude and 38°51'24.5088" longitude (Figure 1). Surrounding the park are expansive agricultural lands to the south and southeast, residential areas (condominiums) to the north and northwest, and the Akaki River and its small tributaries to the east. The BLIP is the first industrial park in Ethiopia that was developed in collaboration with the World Bank Group. Functioning as a large export

zone and modern industrial park, the BLIP commenced operations in 2014 with an initial area of 156 hectares, which has now expanded to over 342 hectares. The surrounding land use predominantly consists of cultivated agricultural lands and scattered settlements. The park serves as a hub for companies involved in export-oriented businesses, particularly in garments, apparel, textiles, leather, and leather products [42]. Numerous foreign countries have established their presence in the park for apparel exports and various commercial activities.

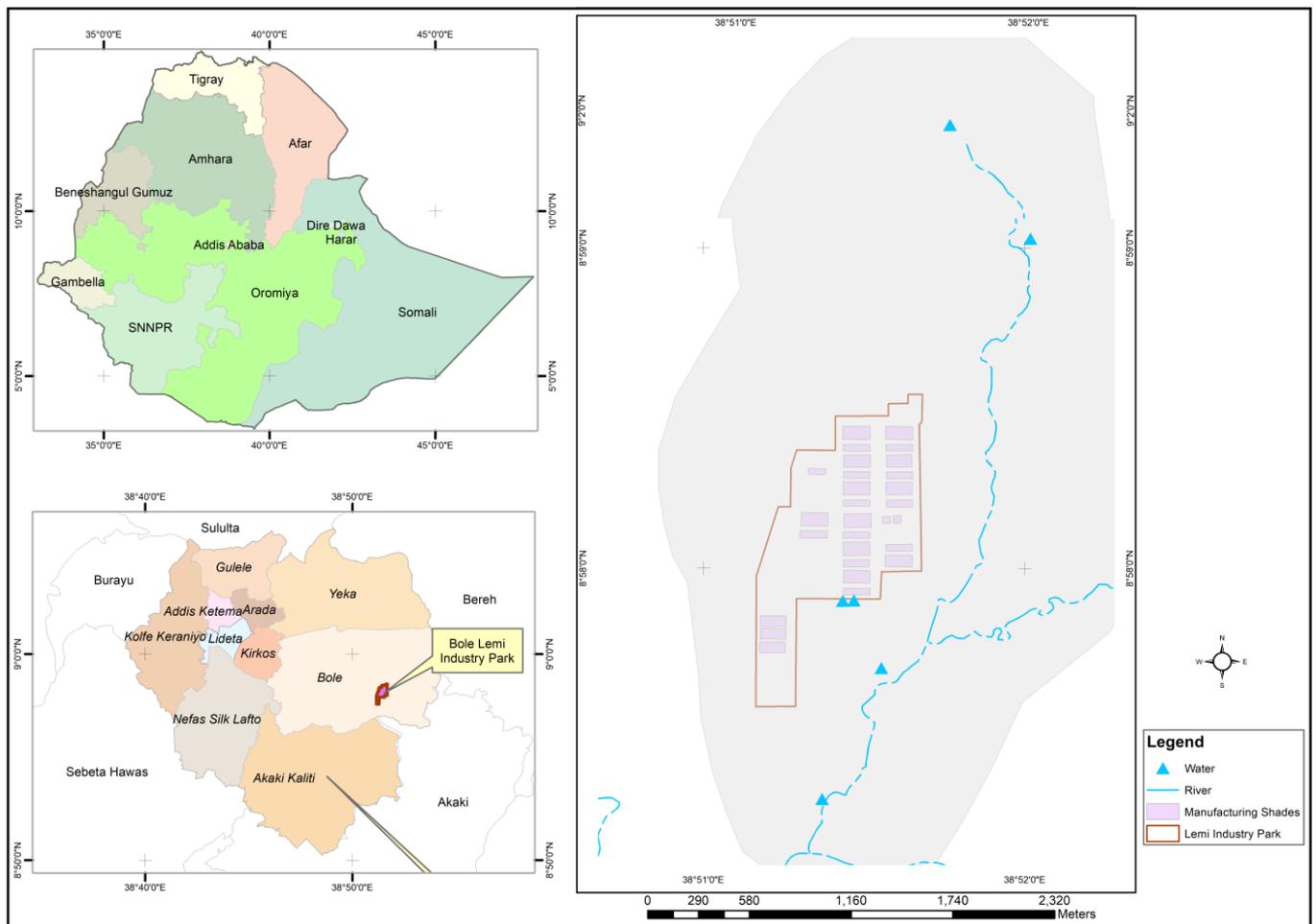


Figure 1. Map of the Bole Lemi Industry Park in Addis Ababa, Ethiopia.

2.2. Sampling Design

A semi-structured questionnaire was created and administered, following the studies of [43,44], to assess the income decline and changes in income sources among the local farmers' households. The survey focused on the periods before (2012) and after (2020) the establishment of the BLIP in its current location. The participants' perceptions and observations regarding the livelihood changes that resulted from the BLIP's establishment were also investigated.

For data collection, the survey targeted farmer heads of households residing in the outskirts of Lemi Kura sub-city, Addis Ababa. All the households selected for the survey belonged to the displaced group, i.e., those having been relocated due to the BLIP being developed in their previous locations. The selection of household representatives was randomized and independent of gender, marital status, education level, ethnicity, and religion. Both male and female household heads were interviewed, and in cases where the head was unavailable or declined participation, another randomly selected household was approached as a replacement.

The sampling units consisted of heads of households who were displaced due to the BLIP. As defined by FAO [45], a household refers to a group of individuals cohabiting and sharing common arrangements for food and other essential needs. Before conducting the survey, a pre-test of the questionnaires was performed on 20 households in September 2020 to identify and rectify any errors, ambiguities, and to enhance the survey tools' validity [46].

2.3. Data Collection Methods

Semi-structured questionnaires were administered to collect data on the livelihood changes caused by the establishment of the BLIP. Local community members who were fluent in the Oromifa and Amharic languages were selected as research assistants to conduct the survey. The questionnaires were initially prepared in English but were orally translated into local languages by the research assistants during interviews to ensure clarity. The research assistants received training on the survey objectives and procedures, and they explained the survey's purpose and scientific terms to each participating household.

The questionnaire consisted of two parts. The first part collected demographic information about the household respondents, including gender, marital status, educational level, ethnicity, and religion, which are important factors influencing livelihood changes. The second part assessed income level, land-holding size in 2012 and 2020, and other relevant factors affected by the establishment of the BLIP. On average, the questionnaire took approximately 40 min to complete.

Random sampling was used, based on the studies of [43,44], to select respondents from the total displaced population in the new resettlement area. A total of 379 family heads, who had lost their land due to the industrial park development, were randomly sampled and interviewed. The survey was conducted in December 2020, and complete anonymity was ensured for all participating households.

2.4. Data Analysis

Descriptive and inferential statistical analyses were conducted. Descriptive statistics, including the mean, standard deviation, minimum, median, maximum, frequency counts, and percentages, were used to summarize the numerical variables. Regression models were employed to examine the associations between independent variables and time periods. The data entry and analysis were performed using IBM SPSS software version 25. Frequency and regression tables were generated to present the percentage of household responses and the analysis results for the variables under investigation. Regression analysis is suitable for assessing the impact of explanatory variables on dichotomous dependent variables with two categories [47]. In this study, two explanatory variables were considered: the time periods of 2012 (before the establishment of the BLIP) and 2020 (after the park was established). Statistical methods, specifically logistic regression models, are commonly used to explore the relationships between variables [48]. These approaches offer the advantage of quantifying the influence of independent variables and providing confidence levels for their contributions [49].

The following multiple linear regression model (Equation (1)) was used to determine how the socioeconomic variables predicted the annual income of the heads of households:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots \dots + \beta_6 X_6 + \varepsilon \quad (1)$$

where Y indicates the respondent's income; X_1 , X_2 , and X_3 represent gender, age, marital status, education level, ethnicity, and religion, etc. Furthermore, α denotes the constant, β_1 , β_2 , $\dots \dots$, β_6 indicate the respective coefficients of the independent variables, whereas ε is the error term in the model.

The regression model focused on the income earned by the displaced communities in 2012 and 2020, representing the period before and after the establishment of the Bole Lemi Industry Park, respectively. Regression analysis was used to examine the relationship between these variables. The data were analyzed with a confidence level of 95% and 99% to ensure statistical significance.

3. Results and Discussion

3.1. Demographic Characteristics of Heads of Households

This study reveals that the displacement caused by development projects has resulted in substantial land and income loss for the affected households. It specifically examines the effects of industry-induced changes in livelihoods on impoverished farmers residing in the peri-urban region of northeastern Addis Ababa.

The cooperation of local communities is crucial for the success and sustainability of development projects [50]. Consequently, the perspectives of communities displaced by the development of the Bole Lemi Industry Park in the outskirts of Addis Ababa were collected and analyzed. Household heads in the Bole Lemi area were interviewed to gather their opinions and insights regarding the establishment of the industry park. A summary of the demographic characteristics of the household heads, including their gender, marital status, educational level, ethnicity, and religion, is presented in Table 1. The majority of the participants (approximately 70.5%) were males. This could be attributed to the presence of more men being engaged in various activities in their localities during the survey period. However, it is important to note that development-induced displacement has adverse effects on the livelihoods of impoverished female-headed households in Ethiopia [51]. Additionally, a study by Shaw and Saharan [52] highlighted the challenges faced by women, who often bear the brunt of displacement, in Kolkata, India.

Table 1. Demographic characteristics of the interviewed heads of households.

Sex of Respondents (HH head)	Freq.	Percent	Cum.
Male	267	70.45	70.5
Female	112	29.55	100
Marital status of respondents			
Single	13	3.45	3.45
Married	305	80.9	84.4
Separated	15	3.98	88.3
Widowed	18	4.77	93.1
Divorced	26	6.9	100
Educational level of respondents			
Cannot read and write	227	60.37	60.4
Basic reading and writing	41	10.9	71.3
Primary school	52	13.83	85.1
Junio secondary school	17	4.52	89.6
Secondary school	27	7.18	96.8
College and above	12	3.19	100
Ethnic background of respondents			
Oromo	346	91.29	91.3
Amhara	8	2.11	93.4
Gurage	23	6.07	99.5
Silte	2	0.53	100
Religion background of respondents			
Orthodox	343	90.5	90.5
Protestant	8	2.11	92.6
Muslim	28	7.39	100

The majority of the participants, approximately 81%, were married. However, as indicated in Table 1, among the selected household heads who participated in the survey, a significant majority (over 60%) had no literacy skills. Regarding the ethnic and religious backgrounds of the respondents, the highest percentage was represented by individuals from the Oromo ethnic group and those who identified as Orthodox Christians, each accounting for approximately 91% of the total respondents. This means that more than 9 out

of 10 respondents belonged to these respective groups, surpassing the representation of any other group.

3.2. Status of Livelihoods and Livelihood Transformation

The process of transforming agricultural livelihoods is intricate [53]. The heads of households acknowledge that farming serves as the primary means of sustenance for communities residing at the outskirts of the city. The survey results indicate a decline in total income since the establishment of the industry park in 2012, which can be attributed to their displacement from their original location. Despite not being widely recognized by the majority of respondents, the new development has had adverse effects on their livelihoods. A significant portion of the land previously utilized for farming by local communities has been allocated for industrial park purposes.

In response to the questions aimed at evaluating the state of livelihood among the displaced individuals following the establishment of the BLIP in their communities, approximately 84% of the household heads expressed that their livelihoods have been adversely affected (Table 2). When queried about the involvement of local communities in the implementation of new developments within their areas, the vast majority of household heads (around 82%) reported a lack of participation. Regarding the perspectives of household heads on the introduction of new developments, a significant majority of the study participants (approximately 80%) expressed resistance toward the new initiatives.

Table 2. Views of the heads of displaced heads of households.

Livelihood of the Displaced People	Freq.	Percent	Cum.
Highly decreasing	161	49.09	49.09
Decreasing	113	34.45	83.54
Remains the same	12	3.66	87.2
Increasing	40	12.2	99.39
Highly increasing	2	0.61	100
Respondents' response of community participation following the introduction of new development			
Yes	65	18.11	18.11
No	294	81.89	100
Respondents' response of their and other community observations on the new introduction			
Highly recognized	14	4.33	4.33
Recognized	51	15.79	20.12
Defensive	198	61.3	81.42
Highly defensive	60	18.58	100
Respondents' response on dejected households before the development of the BLIP			
Poor	16	9.76	9.76
Very poor	14	8.54	18.29
Moderate	86	52.44	70.73
Rich	48	29.27	100
Respondents' response on the rate of transformation			
Agrarian to semi-agrarian	13	7.26	7.26
To trade and service	10	5.59	12.85
To joblessness	124	69.27	82.12
Rural to urban lifestyle	29	16.2	98.32
Other	3	1.68	100

When inquired about their economic status before the establishment of the industry park, 18% of household heads reported being poor, 29% identified as rich, and the majority of respondents (52.4%) described themselves as moderate. Further exploration revealed that a significant proportion of the respondents experienced changes in their livelihood means due to the development of the industry park. The majority (69%) reported becoming jobless, while 16% transitioned from rural to urban lifestyles. Additionally, a smaller percentage shifted their livelihood means from agrarian to semi-agrarian (7.3%) or engaged in trade and services (5.6%) (Table 2). It is noteworthy that farming communities have historically relied on their land for sustenance. However, a significant portion of the land previously used for agriculture in the Bole Lemi area has now been allocated for the industry park.

As per the current Master Plan of Addis Ababa, the land owned by households in the peri-urban areas was primarily designated for agricultural purposes. The survey conducted in this study demonstrates that a majority of the displaced communities heavily relied on farming for their livelihoods. The findings indicate that the establishment of the industry park has brought about changes within the local communities (Table 2). These changes can be analyzed through the lens of livelihood dynamics [54].

Consequently, this study explores the impact of industrialization on local communities' access to agricultural land and the subsequent implications for poverty. The research reveals that many individuals residing in the project area relied entirely on farming for their livelihoods, with crop farming being the predominant activity.

The overwhelming majority of household heads participating in this study emphasized the significant impact of the new development on the livelihoods of local displaced communities. The African continent has experienced a surge in urbanization and industrialization, making it a focal point for such transformations [54]. As a result, peri-urban areas are experiencing complex repercussions [55], including the rapid expansion of cities into surrounding rural regions [56,57]. These changes in land use, induced by development, can have both positive and negative implications for livelihoods. It is crucial to examine any shifts in livelihood patterns that occur when people's means of subsistence are impacted by changing land use and the erosion of assets [55].

The issue of displacement and resettlement caused by development projects is a global phenomenon [30]. According to Table 2, the primary livelihoods of displaced households undergo a dramatic transformation, shifting toward semi-agrarian work, petty trade, and service occupations. Some individuals from the affected groups may engage in trade activities after receiving monetary compensation from the city administration of Addis Ababa. However, a majority (approximately 69.3%) of household heads became unemployed after being displaced from their original land due to the development of an industrial park. This suggests that adequate planning for resettlement and compensation mechanisms that would safeguard the livelihoods of displaced households were not considered. Development projects bring about significant changes in the lives of displaced households, leading to asset loss, limited employment opportunities, and heightened vulnerability [58]. Households that fail to secure employment may face challenges to their livelihood and may develop food insecurity [59].

Unemployed peri-urban farmers who have been displaced face a heightened risk of food insecurity [60]. Muromo et al. [61] emphasizes the importance of effective community engagement to maximize the benefits of development projects for local communities, particularly in terms of generating employment opportunities. However, a portion of the displaced farmers (approximately 16%) transitioned from a peri-urban to an urban lifestyle (Table 2). This finding aligns with the views expressed in [9]. It is crucial for developing countries to consider various strategies for diversifying livelihoods, such as crop diversification, non-farm employment, migration, and self-employment, as well as their implications for household income, food security, and overall well-being.

The expansion of urban areas caused by industrialization can result in land loss, which adversely affects the livelihoods of peri-urban farmers [62]. Shaw and Saharan [52] conducted a study on the effects of displacement caused by development on the well-being

of displaced individuals in Kolkata, India. The research revealed that development-induced displacement brings about substantial alterations in the living circumstances of affected households. These changes include diminished access to essential services, disruption of social networks, and the experience of economic and psychological stress.

The expansion of urban areas negatively affects the economic, social, and environmental aspects of the lives of those living in the periphery, causing agricultural land loss, displacement of farmers, loss of income, and unemployment [63]. Specifically, the expansion of urban areas due to industrialization has a detrimental impact on individuals whose livelihoods primarily rely on economic activities [63]. Additionally, the outward expansion of urban centers due to industrialization can lead to the loss of valuable agricultural land and natural landscapes [64]. This study supports the findings of Muluwork [65], who investigated the impact of urban expansion on the livelihoods and food security of farmers who were displaced due to urbanization in Ethiopia. Urban expansion has resulted in the displacement of numerous farmers from their lands, causing the loss of agricultural land, changes in livelihoods, food insecurity, and poverty, which further exacerbate their marginalization and impoverishment [66].

The assessment of livelihood impact focuses on income levels [67]. Table 3 presents the income and land-holding sizes of households before (2012) and after (2020) the establishment of the BLIP. Prior to the development of the BLIP in 2012, households were earning an average of approximately ETB 84,000 per year. However, following their displacement due to industrial development, their income has decreased significantly, with a minimum of ETB 15,000 and a maximum of ETB 1,400,000 per year. By 2020, the average income level after displacement had further declined to ETB 21,428 per year, with a minimum of ETB 4000 and a maximum of ETB 546,000. Similarly, the average land size per household before the intervention in 2012 was around 2.6 hectares, with a maximum of 18 hectares. However, after the intervention in 2020, the average land size had reduced to approximately 0.4 hectares, with a maximum of 8 hectares. This aligns with the findings of Debela et al. [68], which indicate that industrialization in Ethiopia leads to changes in land use and the livelihoods of smallholder farmers.

Table 3. Income level and landholding size (hectares) before (2012) and after (2020) the establishment of the BLIP.

	Mean	Std. Dev.	Min.	Median	Max.
Income in 2012 **	83,782.322	132,842.18	15,000	60,000	1,400,000
Income in 2020 **	21,428.127	45,396.445	4000	15,500	546,000
Difference	62,354.195	101,698.64	600	39,200	950,000
Total land in early 2012	2.56	2.291	0	2.053	18
Total land in late 2020	0.393	0.845	0	0.037	8
Difference	2.167		0	2.016	10

Std. Dev. = standard deviation; Min. = minimum; and Max. = maximum. ** the two are significantly different.

According to Table 3, the majority of household heads had an average annual income of ETB 80,000 before being displaced from their farmland. However, after displacement, their average annual income decreased to approximately ETB 21,500, resulting in a mean difference of around ETB 62,000 due to the introduction of the new industry park development. Furthermore, the highest proportion of household heads possessed an average of 3 hectares of land in 2012. However, this figure has significantly dropped to an average of only 0.4 hectares of land, indicating a loss of approximately 2.2 hectares of land per household following their displacement from the land due to the development of the industry park.

The findings indicate that the majority of household heads saw a loss of annual income following their displacement from agricultural land, resulting in a significant decrease of approximately 75% in their average annual income due to the new development in their former areas. This substantial decline in income has had a detrimental impact on their livelihoods. The challenges posed by changes in livelihoods that local communities face, and

their potential inability to cope with them, can potentially plunge them into poverty [67]. This strongly suggests that prior to being displaced from their agricultural lands, the household heads were earning their highest annual income from agricultural livelihoods, which provided them with a better means through which to sustain their livelihoods compared to the period after the establishment of the industry park in their localities.

The loss of agricultural income does not lead to the creation of additional employment opportunities in the developed industry park [67]. Moreover, the conversion of land for industrialization poses numerous challenges to the natural environment, such as the loss of productive farmland; changes in energy demand; alterations to the local climate; modifications to hydrological and biogeochemical cycles; habitat fragmentation; soil, air, and water pollution; as well as biodiversity loss [69]. These factors also increase the vulnerability of communities to various risks [66]. This situation directly impacts the livelihoods of impoverished individuals by depleting natural resources [70], particularly endangering agricultural activities that serve as the primary source of income for peri-urban residents [70]. Therefore, it is crucial to adopt a comprehensive and participatory approach to displacement by providing appropriate compensation, resettlement packages, basic services, and support for livelihood restoration and income generation [71,72]. The adverse consequences of development-induced land loss on farmers, including reduced income, food security, and living standards, are significant [73]. Consequently, there is a pressing need for adequate compensation and resettlement policies that address the loss of livelihoods and the long-term well-being of affected communities [74].

Information was gathered from 349 households for the purpose of constructing a regression model, both prior to and following the establishment of the BLIP—specifically in 2012 and 2020. The annual income derived from agricultural pursuits by household heads serves as a significant indicator of poverty levels within the research site. Additionally, various factors have been considered as variables in relation to the annual income of households, and these are presented in Tables 4 and 5.

To examine the impact of the respondents' background characteristics and their views (including gender, age, marital status, education level, ethnicity, religion, family size, respondents' perception of livelihood changes among displaced individuals, and their involvement in the introduction of the new development, i.e., the Bole Lemi Industry Park), a multiple linear regression analysis was conducted. The objective was to determine whether these factors significantly predicted the income levels of respondents in both 2012 (Table 4) and 2020 (Table 5). The perception of residents toward industrial park development was influenced by factors such as education level, occupation, and location [75]. Independent variables, including gender, age, occupation (such as agriculture), the educational level of the household head, and family size, play a significant role in determining the income level of families in farming communities [76]. Consequently, the conversion of farmland to other land uses, such as to industrial purposes, has a direct impact on the livelihood assets of local communities, leading to a decrease in household income, food security, and changes in the social structure, as well as to the loss of traditional knowledge and practices [77]. This highlights the correlation between land-use conversion due to industrialization and the loss of income and displacement of peri-urban livelihoods [78].

Table 4. Multiple regression analysis results for the variables predicting income in 2012 (N = 349).

Income 2012	Coef.	St. Err.	t-Value	p-Value	[95% Conf	Interval]	Sig.
Sex of respondent (Male)	0	.	.	.	.	.
Female	6063.12	7051.68	0.86	0.391	−7822.804	19,949.045	
Age	−30.25	272.237	−0.11	0.912	−566.326	505.832	
Marital status (Single)	0	.	.	.	.	.
Married	3698.822	18,909.527	0.20	0.845	−33,537.168	40,934.811	
Separated	−4924.792	22,760.761	−0.22	0.829	−49,744.499	39,894.914	
Widowed	−7451.841	22,817.69	−0.33	0.744	−52,383.651	37,479.969	
Divorced	9297.789	21,351.968	0.44	0.664	−32,747.771	51,343.349	
Educational level (Unable to read and write)	0	.	.	.	.	.
Basic reading	25,230.76	8844.293	2.85	0.005	7814.886	42,646.641	***
Primary school	23,854.22	7956.653	3.00	0.003	8186.254	39,522.186	***
Junior secondary	13,523.51	17,284.658	0.78	0.435	−20,512.84	47,559.866	
Secondary school	15,600.77	10,521.609	1.48	0.139	−5118.016	36,319.565	
College and above	31,284.98	15,295.362	2.05	0.042	1165.884	61,404.082	**
Ethnicity (Oromo)	0	.	.	.	.	.
Amhara	−72,724.95	26,464.769	−2.75	0.006	−124,838.46	−20,611.437	***
Gurage	−55,442.82	21,570.971	−2.57	0.011	−97,919.63	−12,966.005	**
Silte	−29,531.122	36,296.014	−0.81	0.417	−101,003.98	41,941.739	
Religion (Orthodox)	0	.	.	.	.	.
Protestant	−3970.572	18,880.261	−0.21	0.834	−41,148.933	33,207.788	
Muslim	43,964.523	19,947.553	2.20	0.028	4684.489	83,244.557	**
Total family size	2338.272	1214.376	1.93	0.055	−53.036	4729.579	*
Total family size < 14	994.186	2340.626	0.42	0.671	−3614.895	5603.267	
Total family size > 64	2479.315	4222.838	0.59	0.558	−5836.153	10,794.783	

Table 4. Cont.

Income 2012	Coef.	St. Err.	t-Value	p-Value	[95% Conf	Interval]	Sig.
Respondent response	0	.	.	.	.	.	.
Increasing	11,026.128	32,398.193	0.34	0.734	−52,771.277	74,823.533	
More or less remains the same	37,844.646	34,958.587	1.08	0.28	−30,994.599	106,683.89	
Decreasing	14,996.958	32,052.57	0.47	0.64	−48,119.858	78,113.775	
Highly decreasing	25,731.684	31,698.899	0.81	0.418	−36,688.696	88,152.063	
Respondent response	0	.	.	.	.	.	.
Recognized	25,036.577	16,530.955	1.51	0.131	−7515.61	57,588.764	
Defensive	9005.915	15,162.919	0.59	0.553	−20,852.383	38,864.212	
Highly defensive	27,380.864	16,255.368	1.68	0.093	−4628.647	59,390.376	*
Constant	−622.222	39,452.097	−0.02	0.987	−78,309.934	77,065.489	
Mean dependent var.	87,052.098		SD dependent var.		142,526.950		

*** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table 5. Multiple regression analysis results for the variables predicting income in 2020 (N = 349).

Income in 2020	Coef.	St. Err.	t-Value	p-Value	[95% Conf	Interval]	Sig.
Sex of respondents	0	.	.	.	.	.	.
Female	117.241	2168.443	0.05	0.957	−4152.782	4387.265	
Age	7.022	83.715	0.08	0.933	−157.826	171.87	
Marital status	0	.	.	.	.	.	.
Married	−114.232	5814.818	−0.02	0.984	−11,564.572	11,336.108	
Separated	−2145.58	6999.101	−0.31	0.759	−15,927.968	11,636.808	
Widowed	9120.108	7016.607	1.30	0.195	−4696.753	22,936.969	
Divorced	1657.492	6565.887	0.25	0.801	−11,271.826	14,586.81	
Educational level	0	.	.	.	.	.	.
Basic reading	2896.36	2719.685	1.06	0.288	−2459.146	8251.874	
Primary school	2622.70	2446.729	1.07	0.285	−2195.319	7440.71	
Junior secondary	4493.34	5315.159	0.85	0.399	−5973.091	14,959.765	
Secondary school	3445.02	3235.472	1.06	0.288	−2926.164	9816.196	
College and above	1478.12	4703.436	0.31	0.754	−7783.725	10,739.963	

Table 5. Cont.

Income in 2020	Coef.	St. Err.	t-Value	p-Value	[95% Conf	Interval]	Sig.
Ethnic background	0	.	.	.	.	.	.
Amhara	−6032.038	8138.111	−0.74	0.459	−22,057.325	9993.249	
Gurage	−14,183.38	6633.232	−2.14	0.033	−27,245.317	−1121.454	**
Silte	4933.103	11,161.29	0.44	0.659	−17,045.325	26,911.532	
Religion	0	.	.	.	.	.	.
Protestant	−10,117.68	5805.819	−1.74	0.083	−21,550.299	1314.938	*
Muslim	14,645.329	6134.019	2.39	0.018	2566.431	26,724.227	**
Total family size	−86.708	373.43	−0.23	0.817	−822.053	648.636	
Total family size < 14	−725.016	719.76	−1.01	0.315	−2142.342	692.31	
Total family size > 14	−1176.095	1298.554	−0.91	0.366	−3733.163	1380.972	
Responses	0	.	.	.	.	.	.
Increasing	2885.204	9962.682	0.29	0.772	−16,732.966	22,503.374	
Remains the same	8904.639	10,750.022	0.83	0.408	−12,263.933	30,073.212	
Decreasing	3981.003	9856.4	0.40	0.687	−15,427.881	23,389.887	
Highly decreasing	7267.147	9747.644	0.75	0.457	−11,927.577	26,461.872	
Responses	0	.	.	.	.	.	.
Recognized	3787.774	5083.39	0.75	0.457	−6222.262	13,797.81	
Defensive	5230.784	4662.709	1.12	0.263	−3950.862	14,412.429	
Highly defensive	8269.592	4998.645	1.65	0.099	−1573.567	18,112.752	*
Constant	3050.972	12,131.809	0.25	0.802	−20,838.569	26,940.512	
Mean dependent var.	23,111.399			SD dependent var.	51,414.106		

** $p < 0.05$, * $p < 0.1$.

The educational level of farming communities can serve as an advantage in effectively managing land to maximize its benefits [79]. In relation to household income in 2012 (Table 4), prior to the establishment of the industry park, this study revealed significant predictors such as basic reading skills ($\beta = 25,230.76$, $p < 0.01$), primary school education ($\beta = 23,854.22$, $p < 0.01$), and belonging to the Amhara ethnic group ($\beta = -72,724.95$, $p < 0.01$). The findings indicate that household heads who possessed literacy skills and those belonging to the Amhara ethnic group had a significantly higher income in 2012 (p -value < 0.01) compared to those who were unable to read and write and those belonging to other ethnic groups. Paudel et al. [80] proposes that factors such as household assets and educational level play significant roles in influencing households' choice of livelihood strategies.

Furthermore, this study revealed that individuals with a college education or higher ($\beta = 31,284.98$, $p < 0.05$), belonging to the Gurage ethnic group ($\beta = -55,442.82$, $p < 0.05$), and following the Muslim religion ($\beta = 43,964.523$, $p < 0.05$) significantly predicted household income in 2012 (Table 4). This implies that household heads with a college education or higher, belonging to the Gurage ethnic group, and practicing the Muslim religion had significantly higher income ($p < 0.05$) before their displacement in 2012 compared to those with an education level below college and those belonging to non-Muslim and non-Gurage ethnic groups. However, in 2020 (Table 5), it was found that only belonging to the Gurage ethnic group ($\beta = -14,183.38$, $p < 0.05$) and being a Muslim follower ($\beta = 14,645$, $p < 0.05$) significantly predicted household income. After their displacement in 2020, household heads who were Gurage and Muslim had significantly higher income ($p < 0.05$) compared to those who were non-Muslim and from other ethnic groups.

The factors influencing livelihood diversification differ based on the type of household, with ethnic minority households and those with lower levels of education more inclined to engage in diversified livelihood strategies (Dai et al., 2020) [8]. Interestingly, family size, representing the number of individuals residing in the same household and working together on the same land, was not found to have an impact on the income of the household head. This finding contradicts the findings in [81].

The implementation of past development projects in Addis Ababa resulted in the forced displacement of farmers residing in peri-urban areas. Unfortunately, these farmers were not adequately compensated nor provided with alternative means of sustaining their livelihoods. Consequently, they lost their land, houses, and livestock, which had served as their primary sources of income. As a consequence, their living standards deteriorated, pushing them into poverty [82]. To address this issue, it is important to consider the findings of Xu et al. (2021) [83], who conducted a study on China's new rural revitalization strategy. This strategy aims to enhance rural livelihoods, promote sustainable development in rural regions, as well as to tackle the challenges associated with equitable urban-rural development, environmental degradation, and poverty reduction.

The development of industrial parks brings about a range of impacts on individuals' lives, encompassing both positive and negative aspects. On the positive side, industrialization contributes to job creation and an increase in income for individuals [75]. However, it also brings about negative consequences such as environmental pollution and social issues. Smallholder farmers are particularly affected by industrialization as it significantly alters land use and leads to the loss of farmland, resulting in reduced crop productivity and negative effects on their livelihoods [68]. Moreover, this can lead to an increase in poverty among the affected households [84]. It is worth noting that households that have experienced land loss due to development-induced activities face lower income levels and fewer employment opportunities compared to those who have not undergone such land loss [85].

Industrialization leads to urbanization in the outskirts of cities, resulting in various consequences. This includes a reduction in agricultural land, deforestation, and increased pollution, as well as the displacement of farming communities from their homes—which ultimately affects their means of living [63]. Moreover, it leads to a rise in food insecurity and poverty levels [86]. While industrial development can be a catalyst for economic

growth, poverty alleviation, and improved living standards, Kniivilä [87] warns that without appropriate policies and institutions, it can also exacerbate income inequality. This highlights the importance of adopting a comprehensive approach. Rahman and Hickey [88] suggest the use of an analytical framework to identify the main factors contributing to livelihood vulnerability in specific contexts and to guide policy and intervention strategies.

To promote livelihood diversification and address the unique needs of different households, it is crucial to implement policies and interventions that consider their specific characteristics (Dai et al., 2020) [8]. Additionally, measures should be taken to safeguard the rights and interests of displaced communities and mitigate the adverse effects of displacement on their well-being and means of living [72]. Unfortunately, in the development of industrial parks in Ethiopia, the government did not support farmers in diversifying their livelihoods to reduce their vulnerability from the loss of their agricultural lands. When planning and implementing industrial park projects, policymakers should consider various factors to minimize negative impacts on local communities (Le et al., 2020) [75]. Despite the potential benefits of eco-industrial park development, such as achieving sustainable development goals, reducing environmental harm, and improving social welfare [89], the establishment of industrial parks in Ethiopia has resulted in the displacement of small-scale farmers and the loss of natural, economic, and social assets, including land, water resources, livestock, and social networks [90].

4. Conclusions

Industrialization has significant effects on the livelihoods of the surrounding population. The primary impacts include the loss of fertile agricultural lands and the displacement of farming communities from their farms. Furthermore, it negatively affects natural resources, leading to deforestation, habitat loss, as well as the degradation of water quality and quantity. Additionally, it has an impact on socio-economic activities, resulting in changes to livelihoods.

This study was conducted in the Bole Lemi area on the outskirts of Addis Ababa, whereby survey data was used to explore the perceptions and attitudes of farming communities who were displaced by the development of Bole Lemi industrial parks in their local vicinity. This study examines various factors that influence the perception of these displaced farming communities toward the development of industrial parks, including gender, education level, family size, marital status, ethnic group, etc. The findings of the study indicate that 84% of household heads say that the BLIP has hurt their livelihoods. The majority of respondents (69%) became jobless as a result of the BLIP. Another 16% transitioned to urban lifestyles, while 7.3% shifted to semi-agrarian and 5.6% to trade and services. Furthermore, the study highlights the lack of balance between industrial development in the area and the interests of the local farming communities, thereby failing to ensure their sustainable livelihoods.

A comprehensive approach to industrial development, one that considers social factors and economic considerations, is crucial for displaced communities. Adopting an inclusive approach prioritizing community well-being ensures long-term sustainability. This study recommends effective policies to mitigate the negative impacts of future projects on affected communities. For upcoming developments, eco-industrial processes should be considered to enhance sustainable development, promote economic growth, reduce environmental impact, and benefit displaced communities. Development projects in Addis Ababa must prioritize affected communities, providing compensation and support for resettlement and livelihood diversification. A comprehensive, participatory approach to industrial park development is essential for a sustainable, equitable economic growth while safeguarding local communities.

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