Journal of Experimental Agriculture International

Volume 46, Issue 4, Page 89-94, 2024; Article no.JEAI.113952
ISSN: 2457-0591
(Past name: American Journal of Experimental Agriculture, Past ISSN: 2231-0606)

Livelihood Restoration Options for Mining Affected Areas in the Kalyana Karnataka Region, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JEAI/2024/v46i42343

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/113952

Original Research Article

Received: 29/12/2023
Accepted: 01/03/2024
Published: 04/03/2024

ABSTRACT

The study was conducted to examine the sources of income and alternative livelihood restoration options in six villages of the Kalyana Karnataka region, which were affected by iron ore mining. The sample size of 226 households was considered for the study. Considering the population size, 16 to

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50 respondents were selected randomly from each village. The results of the study explained that the primary source of livelihood was non-agriculture labour (18%), agricultural labour (15%) and farming (32%). The rest were working in private companies (5%), self-employed (12%), and government sector (2%), and the remaining respondents were unemployed or retired.
One third of the families were mainly engaged in unskilled labour-related livelihood sources. Considering these socio-economic statuses, the study focused on identifying alternative sources of livelihood based on the respondents' interests. Around 48 per cent of respondents were interested in taking up alternative sources of income generation. Among alternative sources, 42 per cent of respondents were keen to practice sheep or goat rearing, agroforestry systems (19%), poultry (14%), Backyard dairy (12%), and tailoring (10%). Hence, policymakers may focus on these alternative livelihood options for capacity building and linking to developmental programmes for the mining-affected Kalyana Karnataka region to restore their livelihoods.

Keywords: Livelihood restoration; mining; income generating activities.

1. INTRODUCTION

Vijayanagara and Ballari districts come under the domain of the Kalyana Karnataka region. These districts are rich in iron ore [1]. 2011, the Supreme Court banned mining in these districts [2]. Many households lost their source of livelihood and migrated to metropolitan cities and towns to earn their livelihoods. Later, mining was restarted in 2013, and only formalized mining started to operate [3]. However, employment generation was different from earlier. Hence, many households still depend on migration for their livelihood. Against this backdrop, the study was conducted in 2022 to assess the sources of income and alternative livelihood restoration options.

2. METHODS OF DATA COLLECTION AND ANALYTICAL TOOLS

The present study was conducted to know the socio-economic status of the mining-affected forest fringe villages of the Kalyana-Karnataka region during the year 2022-23. This study was conducted in six villages purposively with total sample size of 226. From each village, 16 to 50 respondents were selected proportionately based on population size. Thereafter, simple random sampling technique was used to identify the respondents. The data was collected using structured, pre-tested open and closed-end questionnaires prepared for the purpose. The collected data was analyzed using appropriate statistical tools like measures of central tendency and dispersion and ratios.

3. RESULTS AND DISCUSSION

The data in Table 1 delineates the respondents' primary source of income and economic measurement. More than two-thirds (67.70 %) of the household head's primary source of income was from non-agriculture, and others (32.30%) were from agriculture. The majority of families do not have land holdings, and very few have marginal land holdings, which are not economical to operate for the study regions [4]. Hence, a higher proportion of families depended on non-agricultural sources for subsistence.

Further, around 15 and more than 18 per cent of family heads were engaged as manual labour in agriculture and non-agriculture sectors, respectively. Hence, poverty remains because of restricted and inequitable access to productive resources such as land, water, improved inputs and technologies. Low literacy and skills conspire to keep people in poverty, prohibiting them from claiming their fundamental rights or engaging in extra activities that would earn them money or help them create assets [5,6]. Therefore, it is not just about poverty alleviation; people need to stand on their feet and develop on their own. Often, people in these villages know, but there must be more opportunities to apply their knowledge.

The results of the study in Tables 2 and 3 revealed that 58 per cent of families do not have access to land (as the majority of geographical land is devoted to forest and non-cultivable land) [4]. Out of 42 per cent of land holdings, only 1.7 per cent medium and large size of land holders and rest were belong to marginal and small farmers having land holding less than two hectares. Hence, it indicates that most of the families were socio-economically weak. These findings were similar to the study conducted by Sivasankar [7] and Scoones [8].

Table 1. Primary source of income of family head (%)

Revenue village	Farming	Private company employee	Self-employed	Govt. employee	Agri. labour	Non-agri. labourer	Retired (Aged)	Unemployed	Total
Danapura	22.0	6.0	12.0	2.0	16.0	24.0	12.0	6.0	100.0
Gunda	57.8	8.9	4.4	-	13.3	8.9	4.4	2.2	100.0
Hanumanahalli	6.3	6.3	18.8	6.3	18.8	12.5	12.5	18.8	100.0
Kallalli	35.7	2.4	7.1	4.8	21.4	11.9	14.3	2.4	100.0
Rajapura	52.9	2.9	14.7	-	17.6	2.9	8.8	-	100.0
Vyasanakere	5.1	5.1	23.1	-	2.6	43.6	15.4	5.1	100.0
Overall	32.3	5.3	12.3	1.8	14.6	18.1	11.1	4.4	100.0

Table 2. Details on land holding (%)

Revenue village	Landless	Marginal	Small	Medium	Large	Total
Danapura	70.0	18.0	8.0	4.0	-	100.0
Gunda	31.1	42.2	24.4	2.2	-	100.0
Hanumanahalli	56.3	37.5	6.3	-	-	100.0
Kallalli	52.4	40.5	7.1	-	-	100.0
Rajapura	41.2	32.4	23.5	-	2.9	100.0
Vyasanakere	94.9	2.6	2.6	-	-	100.0
Overall	58.0	27.9	12.4	1.3	0.4	100.0

Table 3. Details on average land holding (acres)

Revenue village	Marginal (<1.0 ha)	Small (1.0 -2.0 ha)	Medium (2.0 – 4.0 ha)	Large (> 4.0 ha)	Total
Danapura	1.3	3.0	7.5	-	2.6
Gunda	1.3	3.3	5.0	-	2.1
Hanumanahalli	1.1	4.0	-	-	1.5
Kallalli	1.6	3.2	-	-	1.8
Rajapura	1.6	3.5	-	16.0	3.1
Vyasanakere	2.0	2.5	-	-	2.3
Overall	1.4	3.3	6.7	16.0	2.3

The study results in Table 4 revealed that nearly 94 per cent of families were growing seasonal crops like maize, bajra and ragi, and 6 per cent of farming households were growing fodder crops like African tall and Napier grasses. This situation prevails due to dry land and marginal holdings [9]. However, there is a need to educate the farmers to cultivate high-value commercial crops instead of low-value crops. More than Rs. 65,000/ per farming family per year was generated in the study region. More than this, farm income may be required to meet their basic needs in the present market scenario [10].

It was noticed from Table 5 that the majority (90.63 %) of the farmers were not ready to adopt agri-horti-Silvi practices since most of them have inadequate and extension contact from line departments [11]. If the government provides separate support for adopting such technologies, more than 45 per cent of farmers will be ready to take up agri-horti-forestry models in their fields.

Table 6 shows that more than 46 per cent of the willing farmers were ready to adopt agroforestry practices. Moreover, around 34 per cent of the willing farmers were ready to take up pure horticulture. These agri-horti-Silvi and pure horticulture components had higher net returns compared to other models considered in the study. These findings were on par with the study by Banerjee and Dhara [12].

Around 15 per cent of households are presently involved in various income-generating activities like sheep rearing, poultry and dairy. The study found that more or less 40 per cent of respondents were keen to take up income-generating activities (Table 7).

Table 4. Details on cropping pattern and income generated from agriculture

Revenue village	Cropping pattern (% of farmers)		Net income
	Seasonal crops	Fodder	(Rs./Farmer/Annum)
Danapura	93.3	6.7	75200.0
Gunda	100.0	-	60000.0
Hanumanahalli	100.0	-	52714.3
Kallalli	100.0	-	46800.0
Rajapura	75.0	25.0	100650.0
Vyasanakere	100.0	-	55500.0
Overall	93.7	6.3	67547.4

Table 5. Willingness of agri-horti-Silvi practices

Revenue village	Present status (% of farmers)		Willingness to practice (% of farmers)	
	Yes	No	Yes	No
Danapura	-	100.00	40.00	60.00
Gunda	18.75	81.25	41.94	58.06
Hanumanahalli	14.29	85.71	42.86	57.14
Kallalli	5.00	95.00	60.00	40.00
Rajapura	5.00	95.00	50.00	50.00
Vyasanakere	-	100.00	-	100.00
Overall	9.38	90.63	46.32	53.68

Table 6. Interested agroforestry models to take up (% to willingness farmers)

Revenue village	Agro-horti-silvi	Pure horti	Agro-silvi	Horti-silvi	Other	Grand Total
Danapura	26.7	73.3	-	-	-	100.0
Gunda	85.2	-	14.8	-	-	100.0
Hanumanahalli	-	100.0	-	-	-	100.0
Kallalli	64.3	-	7.1	14.3	14.3	100.0
Rajapura	-	60.0	40.0	-	-	100.0
Vyasanakere	50.0	-	50.0	-	-	100.0
Overall	46.3	33.8	15.0	2.5	2.5	100.0

Table 7. Willingness for income-generating activities (% of respondents)

Revenue village	Present status (%)		Willingness to take-up (%)		
	Yes	No	Yes	No	Not Answered
Danapura	6.0	94.0	16.0	-	84.0
Gunda	22.2	77.8	60.0	8.9	31.1
Hanumanahalli	6.3	93.8	-	6.3	93.8
Kallalli	9.5	90.5	31.0	16.7	52.4
Rajapura	2.9	97.1	47.1	-	52.9
Vyasanakere	35.9	64.1	61.5	17.9	20.5
Overall	14.6	85.4	38.9	8.4	52.7

Table 8. Interested income generating activities (% to willingness respondents)

Revenue village	Sheep/goat farming	Poultry	Dairy	Tailoring	Grocery shop	Embroidery	Others
Danapura	25.0	-	25.0	25.0	12.5	-	12.5
Gunda	66.7	11.1	3.7	-	7.4	-	11.1
Hanumanahalli	-	-	-	-	-	-	-
Kallalli	-	30.8	15.4	23.1	-	-	30.8
Rajapura	56.3	6.3	12.5	18.8	6.3	-	-
Vyasanakere	33.3	16.7	16.7	4.2	12.5	4.2	12.5
Overall	42.0	13.6	12.5	10.2	8.0	1.1	12.5

Table 8 gives information on interested income-generating activities for willing respondents. More than 40 per cent of respondents were eager to take up sheep or goat farming, and around 15 per cent of respondents have shown interest in poultry. The studies conducted by Dodmani et al. [13], Nagaraj et al. [14] and Pushpa et al. [15] show that veterinary component income-generating activities were remunerative and returns may be expected within a short span of time.

4. CONCLUSION

One third of families are mainly engaged in unskilled labour-related livelihood sources. Considering these socio-economic statuses, the study focused on identifying alternative sources of livelihood based on the respondents' interests. Considering the willingness of the people to take up agroforestry models with due importance for the horticulture component by integrating with line departments is highly essential.

Family income needed to be increased to meet their basic needs regularly, and most of the livelihood sources were seasonal. Hence, a high-end need exists to support family livelihood by providing additional income through alternative income-generating options. This can be done by conducting vocational training of 21 to 45 days in identified IGA activities like sheep and goat farming, backyard dairy, and poultry. Hence, policymakers may focus on these alternative livelihood options for capacity building and linking to developmental programmes for the mining-affected Kalyana Karnataka region to restore their livelihoods.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/113952