

Livelihood Restoration Options for Mining Affected Areas in Kalyana Karnataka Region

Abstract

The study was conducted in six villages of Kalyana Karnataka region which were affected by iron ore mining. **(State the objective of the study instead of what is stated in the highlighted sentence above)** The sample size of 226 households was considered for the study. Considering the population size, 16 to 50 respondents were selected randomly from each village. Results of the study explained that, 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.

Higher per cent **(state the percentage because you did not used qualitative method to collect data)** of families are mainly engaged in unskilled labour-related livelihood sources. Considering these socioeconomic 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, agro-forestry systems (19 %), Poultry (14 %), Backyard dairy (12 %), 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.

Introduction:

Vijayanagara and Ballari districts come under the domain of Kalyana Karnataka region. These districts are rich in iron ore (GoK, 2022). In the year 2011, the Supreme Court banned mining in these districts (ToI, 2011). 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 (BM, 2013). However, employment generation was not such as earlier. Hence, many households still depend on migration for their livelihood. Against this backdrop, the study was conducted in the year 2022 to **understand use to assess, examine or investigate and not to understand** the sources of income and alternative livelihood restoration options.

Methodology: **Use method of data collection in stead**

The present study was conducted to know the socio economic status of the mining affected forest fringe villages of Kalyana-Karnataka region during the year 2022-23. This study was conducted in six villages purposively with total sample size of 226 **tell us how you arrived at 226 as your sample size based on the population of the study**. From each village 16 to 50 respondents were selected randomly following simple random sampling technique. **Indicate your study population**. The data was collected by using structured pre-tested open and closed end questionnaire prepared for the purpose. The collected data was analysed using appropriate statistical tools like measures of central tendency and dispersion and ratios. **Mention the statistical tools instead of central tendency and dispersion: Mean, standard deviation etc**

Results and discussion:

The data pertaining to the table 1 delineates that the primary source of income and economic measurement of respondents. More than two-third (67.70 %) of the household head primary source of income was from non agriculture and others (32.30%) was from agriculture. Majority of families do not have land holdings and a very few were having marginal land holdings which are not economical to operate for study region (NBSS and LUP, 2021). Hence, higher proportion of families were depending on non-agricultural sources for subsistence.

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

Further, around 15 and more than 18 percent 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 basic rights or engaging in extra activities that would earn them money or help them create assets (Roy, 2022). Therefore, it's not just about poverty alleviation, it's most important for people to stand on their feet and develop on their own. A lot of times, people in these villages have the knowledge, but there are not enough opportunities for them to apply their knowledge.

The results of the study in table 2 and 3 revealed that, 58 percent of families do not have access to land (as majority of geographical land devoted for forest and non-cultivable land) (NBSS and LUP, 2021). Out of 42 percent land holding, majority of them (you did not used qualitative methods such as FGD, Key informant interview as such should not used such statement) belong to marginal and small size land holding. Hence, it clearly indicates that, most of the families were socio-economically weak. These findings were similar with the study conducted by Sivasankar (2020).

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 results of the study in table 4 revealed that, nearly 94 percent of families were growing seasonal crops like maize, bajra and ragi and 6 percent of farming households were growing fodder crops like African tall and napier grasses. This situation prevails due to dry land and marginal holdings (Shabnum *et.al.*, 2022). However, there is a need to educate the farmers to go for cultivation of high value commercial crops instead of low value crops. On an average more than Rs. 65,000/ per farming family per year were generated in the study region. This farm income may not be sufficient to meet their basic needs in the present market scenario (Cingano, 2014).

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

Revenue village	Cropping pattern (% of farmers)		Net income (Rs./Farmer/Annum)
	Seasonal crops	Fodder	
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

It was noticed from the table 5 that, majority (90.63 %) of the farmers were not ready to adopt agri-horti-silvi practices since most of them have **lack** (use “have inadequate knowledge instead”) of knowledge and extension contact from line departments (Kaushik *et. al.*, 2017). If government make separate support for adoption of such technologies more than 45 per cent of farmers ready to take-up agri-horti-forestry models in their fields.

Table 5: Willingness of agri-horti-silvi practices

Revenue village	Present status (% of farmer)		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

It was noticed from the table 6 that, more than 46 per cent of the willingness farmers were ready to adopt agro-forestry practices. Moreover, around 34 per cent of the willingness farmers were ready to take-up pure horticulture. These agri-horti-silvi and pure horticulture components were having higher net returns compared to other models considered in the study. These findings were on par with the study by Banerjee and Dhara (2010).

Table 6: Interested agro-forestry 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

Around 15 per cent of households are presently involved in various income generating activities like sheep rearing, poultry, dairy etc (Remove). The study found out that more or less 40 per cent (Controversial statement, you have to recast it) of respondents were keen to take up income generating activities (Table 7).

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

The table 8 gives information on interested income generating activities for willingness respondents. More than 40 per cent of respondents were eager to take-up sheep or goat farming and around 15 per cent respondents have shown interest on poultry. The studies conducted by Dodmani *et. al.*, (2021), Nagaraj *et. al.*, (2009) and Pushpa *et. al.*, (2021) shows that, veterinary component income generating activities were remunerative and returns may be expected within short span of time.

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

Conclusion:

Higher per cent (you cannot start with higher percent, you need to recast it) of families are mainly engaged in unskilled labour-related livelihood sources. Considering these socioeconomic statuses, the study focused on identifying alternative sources of livelihood based on the respondents' interests. Considering willingness of the people taking up of agro-forestry models with due importance for horticulture component by integrating with line departments is highly essential.

Family income was not sufficient to meet their basic needs regularly and most of the **lively hood** (replace with livelihood) sources were seasonal in nature. Hence, there is a high end need of supporting family livelihood by providing additional income through alternative income generating options. This can be done by conducting vocational trainings of 21 to 45 days duration in identified IGA activities like sheep and goat farming, backyard dairy, poultry **etc.** (remove) 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.

References:

Banerjee H. and P.K. Dhara, 2010: Sustainability and profitability of different agri-horti-silviculture systems in rainfed agro-ecosystem, *Indian J. of Agroforestry Vol. 12 No. 2*: 79-85

BM, 2013: <https://bangaloremirror.indiatimes.com/bangalore/cover-story/friday-marks-the-return-of-mining-in-republic-of-bellary/articleshow/21191531.cms>

Cingano Federico, 2014: Trends in Income Inequality and its Impact on Economic Growth, OECD Social, Employment and Migration Working Papers No. 163

Doddamani Ashok, B. Krishnamurthy and C. Narayanaswamy, Income and Employment Generating Activities and Participation Influence of Tank Management Institute Members under KCBTMP, International Journal of Current Microbiology and Applied Sciences, Volume 10 Number 01 (2021), pp: 2086-2096

GoK, 2022: *Geological Report on Estimation of Iron Ore Reserves*
<https://dmg.karnataka.gov.in/uploads/64991643963360.pdf>

Kaushik Naresh, Tikkoo A., Yadav Pintu, Deswal Pooja, Singh Surender, 2017: Agri–Silvi–Horti Systems for Semiarid Regions of North-West India, Agricultural Research, Vol. 6

Nagaraj N., M.G. Chandrakanth, David Acker, P.G. Chengappa, H.R. Shruthi, C.G. Yadava and Ramesh Kanwar, 2009, Economic Performance of Self Help Groups in Karnataka with Special Reference to Venkatenahalli in South India, Indian Journal of Agricultural Economics, Vol.64 (4) pp: 604-617

NBSS and LUP, 2021: Soils of Bellary District, Karnataka, Report No.357, National Bureau of Soil Survey & Land Use Planning, Nagpur, Maharashtra

Pushpa, P., Pawar, J.B., Lakshman Reddy, B.S., Chandan, K. and Yadava, C.G., 2021. A Study on Extent of Farm Women Participation in Income Generating Activities. Journal of Community Mobilization and Sustainable Development, Vol. 16 (2), pp: 584-586

Roy A., 2022: Various aspects of Education for Better Livelihood, International Journal of Creative Research Thoughts, Vol. 10, (7): 717-722

Shabnum PS, Venkatesh H and Sumesh KG, 2022, Dynamics of cropping pattern in north Karnataka district of Karnataka: A markov chain approach, The Pharma Innovation Journal, SP-11(12): 163-166

Sivasankar V., 2020: Economic Condition of Landless Agricultural Labour in India: A Case Study of Village in Tiruvannamalai District of Tamil Nadu, Journal of Critical Reviews, vol 7, issue 08, 3150 -3153

Tol, 2011: <https://economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/supreme-court-bans-mining-in-iron-ore-rich-bellary-isw-steel-jindal-saw-tata-metaliks-to-be-hit/articleshow/9416182.cms?from=mdr>

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