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Socio-Economic Impacts on Livelihood Diversification of Peatland Communities

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Abstract

This study examines how socioeconomic factors influence livelihood diversification among households living in peatland areas in Palangka Raya City. Peatland ecosystems that are vulnerable to fire, degradation, and environmental pressure require communities to adopt adaptive livelihood strategies to sustain economic stability. Using survey data from 100 households, this study analyzes the roles of education, household income, fire risk, and access to credit within the Sustainable Livelihood Framework. The results show that education and income significantly increase households' likelihood of diversifying their livelihoods, with education emerging as the most influential factor. In contrast, fire risk and access to credit are not statistically significant. These findings indicate that human capital and internal financial capacity play a more decisive role in livelihood decisions than ecological pressure or financial access alone. The study recommends strengthening education, vocational skills, and peatland-based local economic activities to enhance community resilience and support sustainable peatland development in Palangka Raya.

Introduction

Peatland areas in Palangka Raya City, Central Kalimantan, possess considerable economic potential but are simultaneously exposed to complex socio-environmental challenges. These ecosystems are highly vulnerable to degradation, recurrent land fires, and climate variability, all of which directly affect the livelihoods of local communities that remain largely dependent on agriculture, plantations, and other land-based activities. As environmental pressures on peatland carrying capacity intensify, households increasingly diversify their livelihoods as an adaptive response to ecological and economic uncertainty. Previous research (Nasir, 2023) shows that the fragile ecological conditions of peatlands encourage households to adopt more flexible livelihood strategies that are less dependent on land-based production.

A central issue concerns how socioeconomic characteristics such as education, asset ownership, household structure, and access to resources influence households' decisions to diversify their economic activities (Azhar et al., 2025; Yadava et al., 2025; Nalwanga et al., 2025). Prior studies (Yeny et al., 2022; Adriani et al., 2024) emphasize that household socioeconomic conditions strongly determine the capacity of communities to shift toward more diverse and adaptive livelihood portfolios, particularly in environmentally stressed regions such as peatlands. Education and asset ownership expand access to non-traditional employment opportunities, while limited capital and land resources often push households to diversify as a coping strategy under constraint (Nyathi, 2025; John Nyamamu et al., 2025; Majumder et al., 2025).

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Livelihood diversification is widely recognized as a key adaptive strategy for managing both economic and environmental risks (Nkurunziza et al., 2025; Sharma & Choudhury, 2025; Habib et al., 2023). Empirical studies (Beltrán-Tolosa et al., 2022; Yunus et al., 2025) demonstrate that diversification of income sources can reduce household vulnerability to climate variability and fluctuations in land productivity. However, diversification does not always translate into improved welfare, especially where non-farm opportunities remain scarce or poorly remunerated (Chakrabarti, 2023; Mizik et al., 2025). Consequently, the effectiveness of diversification depends substantially on institutional support, including access to training, financial capital, and market linkages for local enterprises (Habib et al., 2022; Akbar et al., 2025; Shobirin, 2025).

From a development economics perspective, livelihood diversification forms part of the broader transformation of local economies toward more inclusive and sustainable livelihood systems (Mahedi et al., 2025; Little et al., 2023; Ongachi & Belinder, 2025). Todaro and Smith (2020) emphasize that community empowerment and the development of diversified economic structures are essential for reducing dependence on environmentally vulnerable resources. In peatland regions, the success of restoration and economic development initiatives depends greatly on the capacity of local governments and institutions such as Indonesia's Peatland and Mangrove Restoration Agency (BRGM) to integrate ecological restoration programs with local economic development (Alamsyah et al., 2023; Darmendrail et al., 2024). Without adequate guidance, training, and financial support, communities often revert to traditional and less sustainable livelihood practices.

Inclusive socioeconomic transformation further requires participatory community empowerment, particularly for vulnerable groups, to enable optimal utilization of local resources. Anam et al. (2024) argue that livelihood diversification becomes more effective when development interventions are participatory and aligned with community needs. Similarly, Indonesia's green economic development roadmap (Bappenas, 2020) supports livelihood transformation in environmentally sensitive regions; however, its implementation requires detailed social mapping to ensure that interventions are appropriately tailored to peatland contexts.

This study adopts the Sustainable Livelihood Framework (SLF), which conceptualizes livelihood outcomes as shaped by five forms of capital: human, financial, natural, physical, and social (Tulika & Ram, 2025; Torres et al., 20266; Kiconco et al., 2025). Within this framework, education represents human capital; household income and access to credit represent financial capital; and peatland fire risk reflects environmental vulnerability within natural capital (Mukhlis et al., 2025; Helmcke et al., 2025; Setiawan, 2025). Livelihood diversification is treated as a livelihood strategy outcome emerging from households' interaction with these capitals under ecological pressure. Grounding the analysis in this framework ensures that variable selection and interpretation are theoretically connected to established rural and environmental livelihood literature.

Methods

This study employs a quantitative approach to examine the influence of socioeconomic factors on livelihood diversification among households in the peatland areas of Palangka Raya City. A survey-based design was used to analyze relationships between household socioeconomic characteristics and livelihood strategies. Such an approach enables the identification of statistical associations between household conditions and alternative livelihood options in peatland contexts while providing an empirical basis for evaluating diversification behavior (Adriani et al., 2024). The research is explanatory in nature, aiming to assess the effects of key

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socioeconomic factors education, income, environmental risk, and access to resources on household livelihood diversification strategies.

Data analysis began with descriptive statistics to characterize respondents' socioeconomic conditions. Frequencies and percentages were calculated for categorical variables (education level, fire risk, and access to credit), while mean, median, and standard deviation were computed for household income. Cross-tabulations between socioeconomic variables and livelihood diversification were conducted to identify preliminary patterns. The chi-square test was applied during the exploratory stage to examine statistical associations. Data quality procedures included checking for missing values and identifying potential outliers.

To test the research hypothesis, binary logistic regression analysis was employed because the dependent variable, livelihood diversification (Y), is dichotomous. The model includes education (X1), household income (X2), fire risk (X3), and access to credit (X4) as predictors. The Wald test was used to assess partial effects, while the Likelihood Ratio Test evaluated the joint significance of all predictors. Results are presented as coefficients, odds ratios, and 95 percent confidence intervals to support substantive interpretation. Model fit was evaluated using the Nagelkerke pseudo-R^2 and the Hosmer–Lemeshow goodness-of-fit test. Diagnostic checks, including residual examination and robustness assessment, were conducted to ensure model validity. All analyses were performed using SPSS version 25.

Operational Definition of Livelihood Diversification

Livelihood diversification in this study is defined as the extent to which a household engages in more than one income-generating activity beyond its primary peatland-based livelihood. Diversification refers to the combination of agricultural and non-agricultural income sources such as wage labor, trading, services, or small-scale enterprises undertaken by the same household within a one-year period.

A household was classified as diversified (1) when it reported at least two distinct income sources across different economic sectors during the previous twelve months (for example farming and trading, farming and wage labor, or farming and services). Households relying on a single primary income source were classified as non-diversified (0). This threshold was adopted to capture structurally plural livelihood systems rather than minor seasonal variation or temporary side activities.

Justification for Binary Specification

Although livelihood diversification is inherently multidimensional, a binary specification was adopted to distinguish households with structurally plural livelihood systems from those dependent on a single activity. The primary analytical objective of this study is to explain the transition from mono-activity to multi-activity livelihood structures in peatland communities. Binary logistic regression has been widely applied in rural livelihood research addressing similar structural livelihood shifts.

Alternative specifications such as diversification indices, income-share measures, or multi-category classifications were considered. However, the survey did not consistently capture proportional income shares across activities, and the sample size (n = 100) resulted in sparse observations across multiple livelihood combinations. Under these conditions, multinomial or ordered models would likely produce unstable parameter estimates. Therefore, binary logistic regression provides the most reliable and interpretable modelling strategy for the available data structure.

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Model Specification and Theoretical Linkage of Variables

The independent variables were selected to represent key livelihood capitals measurable at the household level within the survey design. Education reflects human capital influencing occupational mobility and skill acquisition. Household income represents internal financial capital enabling investment in alternative activities. Access to credit reflects external financial capital available for enterprise development. Fire risk represents environmental vulnerability affecting the stability of peatland-based livelihoods.

While broader structural determinants such as market accessibility, infrastructure quality, land tenure security, and institutional support are also emphasized in livelihood theory, these factors were beyond the scope of the present household-level dataset. Consequently, the model captures core household-level drivers of diversification rather than the full structural context of peatland livelihood systems.

Results and Discussion

Descriptive Analysis of Respondents' Socio-Economic Characteristics

Descriptive analysis aims to provide an overview of the socio-economic characteristics of respondents in the peatland area of Palangka Raya City.

Categorical Variables

Table 1 presents the frequencies and percentages for the variables education level, fire risk, and access to credit.

Variables	Category	Description	Frequency
Education Level (X1)	1	Didn't finish elementary school	2
	2	SD	5
	3	JUNIOR HIGH SCHOOL	48
	4	SMA	44
	5	Diploma/Master's	1
	Total		**100**
Fire Risk (X3)	0	No Fire	19
	1	There was/is a fire	81
	Total		**100**
Access to Credit (X4)	0	No Credit Access	27
	1	Have you ever accessed credit?	73
	Total		**100**

Source: Processed Primary Data, 2025

Education (X1), The majority of respondents had a junior high school education (48.0%). This indicates that most households have human resources with adequate education, which can be initial capital for diversifying livelihoods.

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Fire Risk (X3): 81.0% of respondents live in areas with a high fire risk. This high figure reinforces the urgency of diversification as a risk mitigation strategy for primary livelihoods (e.g., agriculture) that are vulnerable to peatland fires.

Access to Credit (X4): Most respondents (73.0%) have access to formal and informal credit. This access is an important indicator of the availability of financial capital to start or develop new livelihoods.

A study (Nasir D., 2023) Studies have shown that secondary education increases the adaptive capacity of peatland communities to exploit new economic opportunities, thus strengthening the role of education as a crucial asset in livelihood diversification. The high risk of fire in peatlands has also been shown to encourage households to seek alternative income sources as a strategy to reduce economic vulnerability.

Continuous Variable

Table 2. Household income analysis (X2) is presented in statistical form.

Income

Statistik	Nilai
N (Valid)	100
Missing	4
Mean	3.232.000
Median	3.000.000
Mode	3.000.000
Std. Deviation	819.445,489
Variance	$6{,}715 \times 10^{11}$
Range	4.000.000
Minimum	1.000.000
Maximum	5.000.000
Sum	323.200.000

Source: Data processed by SPSS-25

The median household income is Rp3,232,000. The median, which is slightly higher than the mode (Rp3,000,000), indicates that the income distribution is positively skewed (there tend to be some respondents with significantly higher incomes), but overall, household incomes are in the middle range.

A study(Juniati, W.,et.al, 2022) shows that the difference between mean and median income is common in rural communities due to the presence of a small group with significantly higher incomes, thus causing the distribution to tend to be skewed to the right (positively skewed). This finding is consistent with the pattern in this study, where a mean income higher than the median indicates a fairly wide variation in income, even though the majority of households remain in the middle-income category.

Table 3. Spearman's Rho Correlation Test on Symmetric Measures

Independent Variable (X)	Spearman's rs	p-value	Power & Significance
Education (X1)	.528	.000	Strong and Very Significant
Income (X2)	.324	.001	Moderate and Very Significant
Fire Risk (X3)	.206	.040	Weak and Significant

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Access Credit (X4)	.016	.878	Very Weak and Insignificant

Source: Data processed by SPSS-25

Test Results Value*Spearman Correlation*(Coefficient = 0.528) indicates a moderate to strong positive relationship between variables X1 and Y. This means that the higher a person's education level (moving from not completing elementary school to Diploma/Bachelor), the greater their tendency (probability) to diversify. The value*Approximate Significance*(p-value) (0.000) is much smaller than the general significance level (α=0.05) indicating that there is a highly statistically significant relationship between the level of education and the decision to diversify. Likewise, the Spearman Correlation Value of Income (X2) indicates a weak to moderate positive relationship, because the value is positive (0.324), this means that the higher the income, the greater the tendency or probability of respondents to diversify. The ρ-value (0.001) The relationship between income and diversification is statistically significant at the level (α=0.05), although the strength is not very strong (only at a moderate level), this result indicates that respondents with higher income levels have a clear tendency to diversify. The Spearman Correlation value for fire risk (0.206) shows a positive relationship which is classified as weak, using the general significance level, the ρ-value (0.040) is smaller than (α=0.05), Although this relationship is weak, it still shows that increased fire risk is associated with an increase in respondents' tendency to diversify. Meanwhile, the credit access variable (X4) with a value (Rs = 0.016; ρ = 878) shows no statistically significant relationship between credit access (X4) and diversification (Y). Although credit access is often considered a driving factor, in this data, respondents' level of credit access does not have a meaningful or significant correlation with their decision to diversify.

Somewhat different from the findings(Arisanty*et al.*, 2023), which shows that fire risk is proven to be an important determinant of changes in household livelihood strategies. This study confirms that ecological pressures such as peatland fires encourage communities to seek non-agricultural alternatives, thus strengthening the significant relationship between fire risk (X3) and livelihood diversification (Y). The analysis(Adrian*et al.*, 2024) shows that access to credit is a crucial factor in increasing households' ability to exploit new business opportunities in peatlands, thereby expanding livelihood options. This finding is consistent with the results of the χ^2 test, where access to credit (X4) is significantly correlated with livelihood diversification (Y) because the availability of capital enables the development of alternative income sources.

Binary Logistic Regression Analysis

In terms of data quality, the inspection found missing values, but not substantial ones. Several outliers were identified in the Income variable (X2), but were retained as they were considered representative of reasonable income variation across the study sites.

Binary Logistic Regression Analysis is used to test the research hypothesis regarding the influence of independent variables on the probability of livelihood diversification (Y), which is dichotomous (0 or 1).

Model Feasibility Evaluation

Table 4. Model Feasibility Evaluation

Omnibus Tests of Model Coefficients				
		Chi-Square	df	Sig
Step 1	Step	38.485	4	000
	Block	38.485	4	000
	Model	38.485	4	000

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Hosmer and Lemeshow Test				
Step 1		Chi-Square	df	Sig.
		15.043	8	.058
Model Summary				
		Cox & Snell R		Nagelkerke R
Step	-2 Log likelihood	Square		Square
1	97.573[a]	.319		.430
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001				

Source: Data processed by SPSS-25

The Chi-Square value = 38.485 with Sig. = 0.000 < 0.05 indicates that the regression model that includes the variables of education, income, fire risk, and access to credit simultaneously significantly influences livelihood diversification, and the model is suitable for further analysis in explaining the diversification behavior of peatland communities. Meanwhile, the Determination Coefficient (Pseudo R Square) with a Cox & Snell R Square value (0.319) and Nagelkerke R Square (0.430) interprets that 43.0% of the variation in livelihood diversification can be explained by the four socio-economic variables tested. The remaining 57.0% is influenced by other factors such as social capital, skills, market networks, environmental conditions, and government policies. The Hosmer and Lemeshow test shows that there is no significant difference between the observational data and the model predictions.

Results of Simultaneous and Partial Effect Tests

The Likelihood Ratio Test value shows $\chi 2=97.573$. This means that simultaneously, the variables Education (X1), Income (X2), Fire Risk (X3), and Access to Credit (X4) have a significant effect on the probability of households diversifying their livelihoods.

Table 5 presents the results of binary logistic regression.

Variables in the equation

	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Education	2.168	0.522	17.272	1	0.000	8.740
Income	0.000	0.000	5.297	1	0.021	1.000
Fire Risk	0.838	0.704	1.419	1	0.233	2.312
Credit Access	0.485	0.611	0.631	1	0.427	1.624
Constant	-11.550	2.452	22.190	1	0.000	0.000

Variable(s) entered on step 1 : Education, Income, Fire Risk, Credit Akses

Source: Data processed by SPSS-25

The results of the Wald test show that two of the four independent variables have a significant influence on Livelihood Diversification (Y), namely Education (X1) and Income (X2), while Fire Risk (X3) and Access to Credit (X4) are not partially significant.

The Influence of Education

The regression coefficient (B) for the education variable is 2.168 with a significance level of 0.000 (<0.05) and an Exp(B) value of 8.740. These results indicate that education has a positive and significant effect on livelihood diversification. The odds ratio value of 8.740 means that households with a higher level of education have an 8.74 times greater chance of diversifying their livelihoods than households with a lower level of education, assuming other variables are constant. Thus, education is the most dominant factor in driving diversification.

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Income Influence

The income variable has a coefficient value of B = 0.000, with a significance level of 0.021 (<0.05) and Exp(B) = 1.000. Although income has a statistically significant effect on livelihood diversification, the magnitude of the economic impact is relatively small. This indicates that increasing income only slightly increases household opportunities for diversification. Income plays a more important role as a stabilizing factor for the household economy, rather than as a primary driver of diversification.

Impact of Fire Risk

The fire risk variable has a coefficient value of B = 0.838, a significance level of 0.233 (> 0.05), and an Exp(B) value of 2.312. These results indicate that fire risk does not significantly influence livelihood diversification. Although households in high-risk areas are 2.31 times more likely to diversify, this influence is not statistically strong enough to form the main conclusion.

Influence of Credit Access

The credit access variable has a coefficient value of B = 0.485, a significance level of 0.427 (> 0.05), and an Exp(B) value of 1.624. This indicates that credit access does not significantly influence livelihood diversification. Although credit access tends to increase diversification opportunities by 1.62 times, this effect is not statistically strong enough. This indicates that available credit has not been fully utilized as productive capital to encourage alternative community businesses.

Model Constants

The constant value of -11.550 with a significance of 0.000 (<0.05) shows that without the influence of education, income, fire risk, and access to credit, the opportunity for households to diversify their livelihoods is very small.

The regression results indicate that, within the variables included in the model, education and household income show stronger statistical associations with livelihood diversification than fire risk and credit access. This suggests that human capital and internal financial capacity are important enabling conditions for households to adopt plural livelihood strategies. However, this finding should not be interpreted as evidence that ecological or institutional factors are unimportant in peatland livelihood systems. Several structural determinants emphasized in livelihood literature, such as market access, infrastructure, land tenure security, and community institutions, were not included in the present model and may partly mediate the observed effects of education and income.

A study(Arisanty*et al.*, 2023) confirms that ecological pressures such as fires and household economic conditions are the main triggers for changes and diversification of livelihoods, thus supporting the results of this study, namely that the fire risk variables (X3) and income (X2) have a significant influence in the logistic regression model. This study(Adrian*et al.*, 2024)shows that access to credit and financial factors play a direct role in encouraging household business diversification, thus supporting the findings of this study, that X4 is significant while education may become insignificant after controlling for economic variables and access to capital.

Conclusion

This study shows that, among the household-level variables examined, education and income are significantly associated with livelihood diversification in peatland areas of Palangka Raya City. Simultaneously, education, income, fire risk, and access to credit contribute to explaining

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variation in diversification outcomes, indicating that household livelihood strategies emerge from the interaction of social, economic, and environmental conditions.

Partially, education appears as the most influential factor, followed by income, which has a significant but relatively modest effect. These findings suggest that human capital and internal economic capacity play an important role in enabling households to adopt multiple livelihood activities. In contrast, fire risk and access to credit were not statistically significant in the present model. This does not necessarily imply that ecological pressures or financial access are unimportant in peatland livelihoods; rather, their effects may operate indirectly or through structural factors not captured in the dataset.

Therefore, livelihood diversification in peatland communities should be understood as shaped by both household capacities and broader contextual conditions. The results of this study provide partial evidence of household-level drivers rather than a complete representation of peatland livelihood dynamics.

Based on these findings, several policy implications can be drawn. Local governments should prioritize improving education quality, vocational skills, and community capacity as key strategies for supporting livelihood diversification. Formal education, technical training, and locally based capacity-building programs can strengthen households' ability to adapt to economic and environmental change.

In addition, strengthening community productive sectors remains important through support for environmentally sustainable micro and small enterprises based on peatland resources. Efforts to increase household income should be oriented not only toward consumption but also toward productive investment and long-term livelihood sustainability.

Although fire risk and access to credit were not significant in this model, fire mitigation measures and inclusive financing schemes remain essential in peatland development. Credit programs should be accompanied by business mentoring and institutional support to ensure productive use. Future research is recommended to incorporate additional structural variables such as market access, infrastructure, technology adoption, social capital, and local institutional support in order to provide a more comprehensive analysis of livelihood diversification in peatland regions.

This study has several limitations related to variable coverage and measurement of livelihood diversification. First, the binary classification distinguishes only between single activity and multi activity households and does not capture variation in diversification intensity, income balance, or livelihood quality. Second, the model does not include several structural determinants such as market accessibility, infrastructure quality, land tenure security, environmental degradation level, and institutional support. The omission of these factors may lead to omitted variable bias, meaning that part of the estimated influence of education or income may reflect unobserved structural advantages. Therefore, the regression results should be interpreted as identifying partial household level determinants rather than a comprehensive explanation of peatland livelihood diversification.

Future research with larger samples and detailed income composition data is recommended to construct continuous or multi category diversification indices and apply multinomial or fractional logit models to better capture livelihood complexity in peatland communities.

Confession

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References

Adriani, D.et al.(2024) 'Alternative Livelihoods in Restored Peatland Areas in South Sumatra Province, Indonesia',Land, 13(5). https://doi.org/10.3390/land13050643.

Akbar, S., Pradana, M. N. R., Rahma, A., & Rahmah, N. F. (2025). Integrating state-owned enterprises (SOEs), agro-economics, and sustainability: A systematic literature review on contract farming mechanism. Journal of Agrosociology and Sustainability, 3(1), 36-56. https://doi.org/10.61511/jassu.v3i1.2025.1984

Alamsyah et.al (2023) 'Analysis of Peat Ecosystem Restoration Policy in Indonesia using Discourse Network Analysis',Journal of Environmental Science, 22(1), pp. 69–78. https://doi.org/10.14710/jil.22.1.69-78.

Anam S. dkk (2024) 'Regency of Central Kalimantan Province',Civil Service Development Journal, 16(1), pp. 55–68. https://doi.org/10.21787/jbp.16.2024.55-68.

Arisanty, D.et al.(2023) 'Livelihoods of farmers managing fire-prone peatlands: Maintaining ecological and economic sustainability,Asian Journal of Agriculture and Rural Development, 13(3), pp. 215–224. https://doi.org/10.55493/5005.v13i3.4853.

Azhar, N. A. Z. M., Norasikin, N. N. K., Zainuddin, A. Z., Aji, T. S., Cahyono, H., & Hanifa, N. (2025). Asset ownership vs poverty: A study of households in Malaysia. Malaysian Journal of Consumer and Family Economics, 34(1), 649-671.

Bappenas (2020)National Medium-Term Development Plan 2020-2024. https://perpustakaan.bappenas.go.id.

Beltrán-Tolosa, L.M.et al.(2022) 'Rural livelihood diversification is associated with lower vulnerability to climate change in the Andean-Amazonian foothills,PLOS Climate, 1(11), pp. 1–26. https://doi.org/10.1371/journal.pclm.0000051.

Chakrabarti, S. (2023). Factors influencing rural non-farm employment and quality of employment. *Icfai University Jharkhand*.

Darmendrail, D.et al.(2024) ''Assessing the Economic Impact of Land Degradation'. Director General for the Environment of the European Commission. https://www.researchgate.net/publication/235759282

Habib, N., Ariyawardana, A., & Aziz, A. A. (2023). The influence and impact of livelihood capitals on livelihood diversification strategies in developing countries: a systematic literature review. Environmental Science and Pollution Research, 30(27), 69882-69898. https://doi.org/10.1007/s11356-023-27638-2

Habib, N.et al.(2022) 'Determinants of livelihood diversification in rural rainfed areas of Pakistan: evidence from fractional multinomial logit (FMLOGIT) estimation', Environmental Science and Pollution Research,30, pp. 1–12. https://doi.org/10.1007/s11356-022-23040-6.

Helmcke, C., Jenkins, E. G., & Cole, L. E. (2025). Net Zero and the peatland carbon frontier: contesting incentives for ecosystem restoration in Scotland's Western Isles. Scottish Geographical Journal, 141(3-4), 549-590. https://doi.org/10.1080/14702541.2025.2481146

ISSN 2721-0960 (Print), ISSN 2721-0847 (online)

John Nyamamu, E., Nchimbi, C. S., Halifan Mteti, S., & Ndimbo, G. K. (2025). Potentials and challenges for rural livelihood diversification and poverty alleviation in Sub-Saharan Africa: A systematic review. *Sage Open*, *15*(4), 21582440251379011. https://doi.org/10.1177/21582440251379011

Juniati, W., Abdullah, M. L., & Wibowo, M.G. (2022) 'Determinants of Village and Urban Income Inequality in Indonesia', Journal of Developing Economics,7(2), pp. 266–279. https://doi.org/10.20473/jde.v7i2.33980

Kiconco, M., Nelmapius, A., Venter, E., & Alinda, K. (2025). Livelihood capital access and sustainable livelihood outcomes of park adjacent communities in Uganda. IIMBG Journal of Sustainable Business and Innovation, 3(2), 192-212.

Little, V. J., Ho, H. H. P., & Eti-Tofinga, B. (2023). Not WEIRD at all! Towards more pluralistic economies and sustainable livelihoods. Journal of Macromarketing, 43(2), 190-214. https://doi.org/10.1177/02761467231157429

Mahedi, M., Pervez, A. K. M., Rahman, S. M., Sheikh, M. M., & Shaili, S. J. (2025). Emerging trends in livelihood diversification in rural communities: A bibliometric and systematic review. Asian Journal of Agricultural Extension, Economics & Sociology, 43(4), 162-177. https://doi.org/10.9734/ajaees/2025/v43i42727

Majumder, S. (2025). Diversifying 'out of necessity, not choice': The gender paradox of household headship in livelihood diversification of an indigenous South Asian community. Human Geography, 19427786251365368. https://doi.org/10.1177/19427786251365368

Mizik, T., Nagy, J., Molnár, E. M., & Maró, Z. M. (2025). Challenges of employment in the agrifood sector of developing countries—a systematic literature review. Humanities and Social Sciences Communications, 12(1), 62. https://doi.org/10.1057/s41599-024-04308-3

Mukhlis, M., Daniswara, N., Abdillah, A., & Sofiaturrohmah, S. (2025). The Intersectional Lens: Unpacking the Socio-Ecological Impacts of Oil Palm Expansion in Rural Indonesia. Sustainability, 17(23), 10570. https://doi.org/10.3390/su172310570

Nalwanga, F. S., Kisira, Y., & Mukwaya, P. I. (2025). Resilience to drought in Uganda's cattle corridor: gendered assets, expenditure, and decision-making. BMC Environmental Science, 2(1), 14. https://doi.org/10.1186/s44329-025-00028-4

Nasir D. (2023) 'Livelihoods in the Peatlands of Central Kalimantan Province, Indonesia: Options for Utilizing Land Resources in Buntoi Village, Basarang Jaya Village, Sabangau Permai Village, and Karang Sari Village. Journal of Tropical Silviculture, 14(03), pp. 281–287. https://journal.ipb.ac.id/jsilvik/article/view/52716.

Nkurunziza, F., Kabanda, R., & McSharry, P. (2025). Coping mechanisms: how female-headed households manage shocks through diversified livelihoods. *Environment, Development and Sustainability*, 1-22. https://doi.org/10.1007/s10668-025-06409-8

Nyathi, D. (2025). Motives and constraints of rural livelihoods diversification in dry-land agrarian settings of Matabeleland, Zimbabwe. Journal of Asian and African Studies, 60(7), 4403-4421. https://doi.org/10.1177/00219096241257696

Ongachi, W., & Belinder, I. (2025). Agricultural extension as a pathway to livelihood diversification and sustainable development in rural communities: a systematic review. BMC Agriculture, 1(1), 6. https://doi.org/10.1186/s44399-025-00005-x

ISSN 2721-0960 (Print), ISSN 2721-0847 (online)

Setiawan, A. A. (2025). Building resilience in Indonesian agrarian communities: Adaptation strategies and institutional barriers in response to climate change. *Social Agriculture, Food System, and Environmental Sustainability*, *2*(1), 63-76. https://doi.org/10.61511/safses.v2i1.2025.2274

Sharma, P., & Choudhury, G. (2025). Determinants of rural livelihood diversification strategies: an altitudinal study in the Eastern Himalayas, India. International Journal of Sociology and Social Policy, 45(9-10), 942-958.

Shobirin, M. S. (2025). Strengthening Human Capital Through Vocational Education For Inclusive Rural Economic Growth. International Journal of Economics and Development, 1(1), 46-62.

Todaro, M. P., dan Smith, S. C. (2020).Economic Development 13th Edition. London: Pearson Education. https://books.google.co.id/books

Torres, P. H. C., Momm, S., Milz, B., Lombardi, T. T., Araujo, G. M., Bauer, B., & Nyamai, D. N. (2026). Reframing the sustainable livelihoods framework in urban crisis contexts: mobility, health, natural capital and the impacts of the COVID-19 pandemic in São Paulo City (Brazil). International Journal of Environmental Medicine, 1(1), 3. https://doi.org/10.3390/ijem1010003

Tulika, & Ram, P. (2025). Linking social capital and sustainable livelihood: the mediating effect of financial literacy and moderating role of market access. International Journal of Sociology and Social Policy, 1-19.

Yadava, C. G., Kulkarni, G. N., Naik, B. K., Guledagudda, S. S., Vasudeva, R., & Hegde, R. V. (2025). Roots and Routes to Income: Unveiling Socio-economic Drivers among Gouli and Siddi Communities of Central Western Ghats, Karnataka, India. Journal of Scientific Research and Reports, 31(8), 128-136.

Yeny, I.et al.(2022) 'Assessing the Socio-Economic and Natural Resource Risks of Food Estate Development on Peatlands: A Strategy for Economic Recovery and Natural Resource Sustainability', Sustainability (Switzerland), 14(7), pp. 1–29. https://doi.org/10.3390/su14073961.

Yunus, M., Pagdee, A. and Baral, H. (2025) 'Local Livelihoods and Determinants of Peatland Protection in Indonesia',Trees, Forests and Humans, 19, p. 100800. https://doi.org/https://doi.org/10.1016/j.tfp.2025.100800.

ISSN 2721-0960 (Print), ISSN 2721-0847 (online)