

Agricultural Household Economic In Condition Flood Impact Of Climate Change In Indonesia (M.Yamin)

by Fachrur Rozie

Submission date: 26-Feb-2025 03:32PM (UTC+0700)

Submission ID: 2598889056

File name: mic_In_Condition_Flood_Impact_Of_Climate_Change_In_Indonesia.pdf (884.58K)

Word count: 5227

Character count: 29453

PAPER · OPEN ACCESS

2

Agricultural Household Economic In Condition Flood Impact Of Climate Change In Indonesia

To cite this article: M Yamin and N E Putri 2024 *IOP Conf. Ser.: Earth Environ. Sci.* **1364** 012017

View the [article online](#) for updates and enhancements.

You may also like

- [Farming system archetypes help explain the uptake of agri-environment practices in Europe](#)
Tomáš Václavík, Michael Beckmann, Marek Bedná et al.

- [Subnational distribution of average farm size and smallholder contributions to global food production](#)
Leah H Samberg, James S Gerber, Navin Bamankutty et al.

- [Determinants of crop insurance participation of farming households in Mekong River Delta, Vietnam in climate change context](#)
Do Huong Lan, Dinh Duc Truong, Bui Thi Hoang Lan et al.

UNITED THROUGH SCIENCE & TECHNOLOGY

ECS The Electrochemical Society
Advancing solid state & electrochemical science & technology

**248th
ECS Meeting**
Chicago, IL
October 12-16, 2025
Hilton Chicago

**Science +
Technology +
YOU!**

**SUBMIT
ABSTRACTS by
March 28, 2025**

SUBMIT NOW

Agricultural Household Economic In Condition Flood Impact Of Climate Change In Indonesia

M Yamin^{1*}, N E Putri¹

¹Program Studi Agribisnis, Jurusan Sosial Ekonomi Pertanian, Fakultas Pertanian, Universitas Sriwijaya, Jalan Palembang-Prabumulih, KM 32, Indralaya, Sumatera Selatan, Indonesia

*Corresponding author, email: yamin@unsri.ac.id

Abstract. Floods cause vulnerability to the livelihoods of farm households that rely on land for farming as the main livelihood. Strategy is required for the livelihood of farm households to be sustainable despite the flood disaster. This study aims to: 1) analyze the income structure of farmers affected by floods affected by climate change in Indonesia and 2) assess the sustainability level of household income sources of farmers affected by the flood. Through primary and secondary data collection, the research method used is a survey method representing three provinces: South Sumatra, Central Java, and East Kalimantan. Data analysis performed is the calculation of household income structure analysis, agrarian density calculation, and ability to support life. This research results from the farmer's income structure: contribution from the most significant second largest on the farm comes from no farm and smallest from off-farm. Based on land carrying capacity and agricultural density, rice farming is sustainable.

Keywords: farming, paddy, income, carrying capacity.

1. Introduction

Due to increasing concerns regarding the mentioned issues and significant climate change affecting farmers, the environment-agriculture relationship has attracted much attention of researchers regarding environmental adaptation measures and climate change post global change [1]. Due to their reliance on rain-fed agriculture and poor ability to adapt to climate fluctuation and change, Indonesia is especially vulnerable to climate change [2]. Most people still depend on agriculture, with relatively low productivity and income; poverty, unemployment, and food insecurity are found in rural areas [3]. Farmers rely heavily on natural resources for their livelihoods, and low-income households are more vulnerable to floods and droughts than high-income households. However, floods affect households with low incomes and high reliance on natural resources more [4]. This condition calls for alleviating poverty, unemployment, and food insecurity through agricultural and rural development [5]. Development must consider each rural area's characteristics [6]. To protect agriculture from climate change, governments needed improved and implemented many adaptation programs [7].

The effects of global climate change have begun and are headed for more serious problems [8]. Global climate change is recognized as a severe threat to agriculture. A threat of great concern to farmers is hydrometeorology (floods and droughts) [9]. Climate change can degrade the environment and ecosystems, increasing the risk of productivity declines and crop failures. This situation threatens national food security [10]. Climate factors are necessary for enough agricultural production to maintain the producers' households' income balance. The agricultural output, however, is affected by variations in climate characteristics, which in turn impacts the farmers' revenue levels [11].

A fundamental problem for present and future agriculture is increasing environmental destruction and global climate change, such as the ecological catastrophe caused by the Flooding of paddy fields. [12]. Flooding in paddy fields adversely affects social capital, human capital, wealth ownership, livelihood diversity, access to inputs, and psychosocial skills [13]. Therefore, the most vulnerable household assets to floods were agricultural land, human health, housing, and financial savings. The land is an essential commodity for farmers, providing food and livelihood [14].

Agriculture may lead to higher technical risk and decreased income farming due to the feedback link between agricultural production and climate change [15]. The vulnerability of household income sources



to Flooding causes rice farm households to seek alternative income sources. During floods, the primary source of income can survive or provide a sustainable livelihood instead [16]. However, farmers lose their income and wealth during floods, which they can only partially recover. As such, they are becoming increasingly poor and thus need help making livelihood adjustments that allow longer-term adjustments. Sustainable development is a concept that can meet the needs of today's generation without sacrificing future generations. Development sustainability can be approached from Social, economic, and institutional [17]. Climate change concerns are growing among governments and policymakers. The SDGs-13 aim emphasizes the significance of creating adaptation strategies that lessen its negative consequences and, eventually, protect society and the environment from dealing with this unavoidable challenge. This problem is particularly crucial for developing nations, which lack the adaptability, sophisticated infrastructure and technology, need to be considered and most importantly the quality of human and physical resources needed to mitigate threats related to climate change [18].

Climate change substantially impacts rice and maize, a primary food crop, but has no impact on overall agricultural productivity [19]. While there are no easy solutions to the problems of farmers and similar problems in many other countries, the development of agricultural cooperatives can promote the interests of farmers, and many of them are related to the limited assets they have to overcome [20]. It has been recognized as a method that helps solve the problem. Cash crops such as rice have a statistically significant positive impact on household income [21]. A disaggregated analysis shows that rice cultivation significantly increases agricultural income but reduces off-farm income [22]. The decline in income affects household spending and consumption, which will ultimately have an impact on the level of household welfare. Due to floods, farming has a higher risk, so land conversion occurs, namely from agricultural land to non-agricultural land. This condition can threaten the Sustainability of farming [23] due to technical cultivation and land carrying capacity. Based on the above issues, the objectives of this study are to: analyze the income structure of paddy farmers affected by ecological flood disasters due to climate change in Indonesia and evaluate the Sustainability of household income sources for farmers affected by ecological flood disasters. The results of this study is expected to be a reference for the government to determine policies. At the same time, stakeholders create programs to help farmers affected by floods.

2. Research Method

This research was conducted in 3 provinces that are enough to represent Indonesia, namely Ogan Ilir Regency, South Sumatra Province; Pati Regency, Central Java Province; and Samarinda Regency, East Kalimantan Province. Taking the location of this study is determined intentionally (purposive). Area selection consideration is experiencing ecological flood disasters due to climate change, especially flooding on paddy fields, experiencing the vulnerability of source of income to households, and rely on land as the primary source income of household. In addition, in this region, there is a relatively wide rice field area, as well as a national food granary. Data used in this paper are from farmers' households as respondents in 2022. The research method used a survey method. The sampling method used is a simple random sampling method. This study's sample criteria are 1) rice farmers and 2) experiencing ecological disaster flooding on farmland. The sample size was 90 people, with details of 30 samples per research area. The study was conducted at two levels: household and region. At the household level are a microanalysis of income structure and economic welfare status compared to the poverty line. At the village level is a measure of agricultural density and carrying capacity of life.

To find out the structure of household income of rice farmers who experienced ecological flood disaster, then analyzed the structure of income through the calculation of the household income of rice farmers in the region, by the formula:

$$\Sigma Y_i = \Sigma F_i + \Sigma OF_i + \Sigma NF_i \dots\dots\dots (1)$$

Y : household income (Rp/yr)

F : on farm income (Rp/yr)

OF : off farm income (Rp/yr)

NF : no-farm income (Rp/yr)

i : number of samples

Revenue on the farm and off-farm households is the total annual income that has been reduced production costs, which is taken as net income. Likewise, non-farm income is the total annual income that has reduced costs to obtain net income. These three sources of household livelihood activities will be synchronized to measure the contribution of each livelihood and the livelihood shift trend.

To calculate income per capita, then used formulation:

$$\text{Income per capita} = \frac{Y/365}{\text{number of household member}} \dots\dots\dots (2)$$

Furthermore, the results of revenue calculations are compared with poverty line standards, using World Bank poverty indicators of US \$ 2 per day (Rupiah conversion). To find out the condition of ecosystem carrying capacity (ecology) in supporting the socioeconomic life of the local population, the measurement of agricultural density, with the formulation as follows:

$$\text{Agrarian density} = \frac{\text{amount of population}}{\text{amount of land for agriculture}} \dots\dots\dots (3)$$

$$\text{Carrying capacity} = \frac{\text{harvest yields}}{\text{amount of population}} \dots\dots\dots (4)$$

The result of the agrarian density calculation shows the density of agricultural land that has been worked out and compared agrarian density in the three study villages with the ability to support their life. Furthermore, the calculation of the ability to support life is converted to the rupiah value, where 1 kilogram of grain is assumed to be Rp. 8,000 / kg of grain. The conversion of this grain value will be compared with the regional minimum wage (UMR) and the average living needs of workers based on the Central Bureau of Statistics standards.

3. Results and Discussion

3.1. Household Income Structure

The five variables used in the study are family size, land area owned, experience, consulting services, and farmer production. All of these variables have a statistically significant impact on household income, so that the five predictor variables have a greater impact on household net income [23]. Furthermore, social capital possessed by individuals is a way to maximize the abilities obtained from relationships built with other people, so that it becomes a source of capital that can be used as capital to increase knowledge for their business knowledge. Good social capital possessed by farmers will encourage informal learning. The Community is a main platform to learn, share information and carry out activities aimed at enhancing business knowledge, skills and competencies [24]. The income of rural farm households in these three research sites shows that the dominant income is sourced from on-farm activities. Rice fields remain the main source of household income despite long-lasting floods, resulting in frequent crop and harvest failures. At the time of the study, the land in the three study areas was in flooded condition, so there were farmers who failed to harvest, and some were still able to harvest even though production was much reduced. In South Sumatra Province, flooded land is swampland that can be planted once or twice a year (IP200). In Central Java Province, irrigated land can be planted twice or three times (IP200-300) but is flooded, while in East Kalimantan, it is lebak swamp land that can only be planted once a year (IP100).

Table 1. Household Income

N o	Province	Monthly (Rp/Ha/month)	Yearly (Rp/Ha/year)
1.	South Sumatra	5,898,611	70,783,333
2.	Central Java	3,934,000	47,208,000
3.	East Kalimantan	2,412,778	28,953,333

Source: Processed primary data

Table 1. explains that the average income of farmers in affected paddy fields is highest in South Sumatra. The second largest income is from rice farmers in East Kalimantan, and the smallest is from Central Java. This means that the areas most affected by the flooding impacts in rice fields are in Central Java.

The average income of households in Central Java per month is only Rp. 2,412,778, -. While in South Sumatra, the average household of farmers has an income of Rp. 5,898,611, - per month, almost double the income of farm households in Central Java. This condition is caused by a flood that occurred in the rice field area in Central Java that flooded the rice field longer, so the level of loss of farmers is far higher than in areas of South Sumatra and East Kalimantan. Farming in Kalimantan Timur Farmers used two strategies to increase their income: (a) growing various crops to spread their agricultural output and income throughout the year and (b) supporting their households' income with only one crop in some months while having none in others. There was one period of multi-product support in the highlands and two periods of multi-product support in the lowlands. Therefore, it is necessary to find other sources of income, such as off-farm and on-farm work. Thus it is necessary to locate alternative sources of income, such as off-farm and non-farm work. Farmers' diverse farming endeavors strive to spread risks, provide food security, and maintain the stability of agricultural products [25]. Total environmental factor affecting agriculture In addition to considering intended output, productivity also analyzes resource efficiency and environmental friendliness [26].

Table 2. shows that in the three study sites, there is a difference in the primary income source of farmer households affected by ecological flood disasters. South Sumatra's dominant income is from on-farm and non-farm activities, while off-farm activities are almost nonexistent. This means that the average farmer owns his rice field in this area. Still, a few households work as farm laborers—the absence of agricultural processing activities and the provision of production facilities in this village. Food crop agricultural products in South Sumatra Province are relatively not much processed, so there are not enough jobs in the off-farm sector. Even jobs in the non-farm sector are more available, such as selling household products that have nothing to do with products and services related to agriculture, laborers in construction work, and other jobs that have nothing to do with agriculture.

Table 2. Household Income Structure (%)

No	Source of Income	South Sumatra	Central Java	East Kalimantan
1.	On-farm	76.50	77.74	84.37
2.	Off-farm	0.42	8.53	9.60
3.	Non-Farm	23.08	13.73	6.03
	Total	100.00	100.00	100.00

Source: Processed primary data

In East Kalimantan, a principal activity is also from on-farm, but off-farm activities are more than in South Sumatera. In this area, off-farm and non-farm activities have more done by farmers of rice fields affected by floods, compared to South Sumatra and Central Java. Jobs such as farm laborers are relatively more available, and the processing of agricultural products into food is peddled around the village. While working in the non-farm group is relatively smaller than the other two provinces. This shows that most farmers only focus on agricultural activities (on-farm). In Central Java, non-farm jobs contribute relatively higher income than off-farm. This is due to good infrastructure and various economic activities available so that many farmers can work in the off-farm sector. As large the contribution of household income from off-farm and non-farm, the smaller the dependence of farmers on farming, so the less risk due to Flooding of agricultural land. Off-farm and non-farm livelihood change is becoming an alternative to farmers' household livelihoods during floods. Small landholding households that depend on subsistence farming and have limited income diversification are particularly vulnerable to Flooding. Small landholdings are caused mainly by improper resettling of former bonded laborers and land fragmentation brought on by family members living apart [27]. Reduced income diversification and an uncertain reduction in inequality, both related to general income drops, are the overall consequences. If the households affected by these changes lack the resources to resume farming, these changes may become permanent [28]. There is no significant impact on household per capita agricultural income from routine household off-farm participation. However, when agricultural income is divided then into crop and livestock income, it is found that involvement in regular non-farm activities

increases income. Households' regular participation in non-agricultural activities does not have a significant impact on the household's per capita agricultural income. However, we found that when dividing agricultural income between crop income and livestock income, regular participation in non-agricultural activities increased livestock income per capita without does not affect average crop income per capita [29].

3.2. Household Welfare Status

Results of household welfare analysis were conducted by comparing the income level of farm households with the poverty line. There are significant differences in farmers' household welfare conditions under normal and flood conditions. In flood conditions, the household income of farmers decreased. In South Sumatra and Central Java, flooding households' incomes have declined and are below the poverty line. Meanwhile, in East Kalimantan, farm households experienced a decrease in income but were still slightly above the poverty line. In other words, the farmers' households in these three research areas fell into poverty due to ecological floods in the paddy fields they worked on. Increasing per capita income has been proven to have a significant beneficial impact on individual happiness. In general, people with relatively low income value total income more than people with relatively high income [30].

Table 3. Household Income Under Normal Conditions And Flood

No	Province	Normal Condition (Rp/mth)	Floods Condition (Rp/mth)	Change Income (%)	Poverty Line (Rp/mth)
1.	South Sumatra	1.047.091	646.450	(38,26)	855.900
2.	Central Cava	1.525.306	906.625	(40,56)	855.900
3.	East Kalimantan	921.019	650.972	(29,32)	855.900

Source: Processed primary data

Farm household income in South Sumatra and Central Java is below the poverty line, and farm households in East Kalimantan are above the poverty line. This is because the income from on-farm activities decreases when the household flood loses one harvest revenue due to Flooding. For farmer's households in East Kalimantan, farmers' household income is still above the poverty line because it can obtain more alternative no farms due to its location closer to Samarinda city (provincial capital). Loss of household income from on-farm activities can be covered by income from non-farm activities. The most significant decline occurred in East Kalimantan, and this is because the flood that occurred pooled for approximately 3-4 days per incident of Flooding and lasted months during the rainy season.

The Ecological Public Welfare Position reflects necessary practical improvements, particularly in the Payment for Environmental Services program. It is a significant push to consolidate poverty reduction successes and support rural redevelopment. By appointing competent, low-income rural residents to serve as ecosystem managers. This can encourage farmers, community, government institutions, the private sector and other organizations to participate in ecosystem conservation activities and provide employment opportunities for local communities [31]. By increasing income from socio-economic activities in the main business area by utilizing the environment or existing resources and reducing the proportion of ecosystem services, poverty alleviation relocation programs can improve the income structure of rural households [32]. Crop and income diversification have a positive reciprocal relationship. Spending on consumption decreases agricultural diversification while boosting income diversification. Relevance in practice: More livelihood activities should be encouraged by a policy purpose to improve the well-being of rice farmers [33].

3.3. Agrarian Density and Carrying Capacity

The agrarian density analysis shows that for South Sumatra, 1.8 people per hectare, which means the agrarian density is still low, where each person on average can work the land about 0.9 Ha. This

condition is still sufficient to sustain the life of farm households in this area but with conditions close to the poverty line. It is also related to the life-carrying capacity of 2.85 tons/capita, which if converted to Rp. 712,019,04, -. In Flooding conditions, the carrying capacity of this environment will decrease further, so the result of this analysis is in line with the welfare status of the farmer's household in poor condition.

In Central Java, agriculture density is 14.2 people/ha, which means that agrarian density in this area is very high. Land fragmentation has occurred in this area so farmers can only work on minimal land. The carrying capacity of life in this area is relatively deficient at 0.35 tons/ha per year or equivalent to Rp. 88.064, - per person/month. In East Kalimantan, agrarian density is relatively low compared to Central Java but relatively higher than in South Sumatra. This is because the area is already a village not far from the city, so the population is relatively more dense. Hence, the density of agriculture is higher than in South Sumatra. The agricultural density of this area of 3.8 soul/ha, and the carrying capacity of life of 1.33 tons/person or equivalent to Rp. 332.171, -.

Table 4. Agrarian Density And Carrying Capacity

No	Province	Agrarian Density	Carrying Capacity	Value (Rp/mth)
1.	South Sumatra	1.8	2.85	712.019,04
2.	Central Java	14.2	0.35	88.064,96
3.	East Kalimantan	3.8	1.33	332.171,62

Source: Processed primary data

Table 4 shows the highest agricultural density in Central Java and the lowest agricultural density in South Sumatra. Central Java is densely populated, so more land is needed. Therefore, when the floods, the income of farm households decreases and is below the poverty line. In contrast to East Kalimantan, although the population is relatively dense, the available land is still sufficient, so the agrarian density is still relatively low. The percentage of crops planted and the carrying capacity of the agricultural land resources under climate change were significantly correlated. Additionally, changing the amount of wheat, soybean, and rice planted while raising the proportion of maize will help increase the capacity of agricultural land and promote the development of wetlands and agriculture in harmony [34]. Natural disasters produce an abrupt rise or fall in the availability of natural resources, which damages the soil, affects rice output and quality, and ultimately leads to the failure of agriculture [35].

The results of this study also provide a lesson that needed work, alternative business, and capital access to sustain the household farming economy during the flood disaster. Governments should work harder with communities to reduce the impact of floods and increase farmers' adaptation to global warming. The seven main obstacles identified are: (i) behavior applied in daily life; (ii) awareness and anticipation of climate change; (iii) no controls are in place; (iv) physical limitations of housing to access fields or rice fields; (v) social behavior and knowledge, (vi) existing regulations; and (vii) economics. Considering the potential significant impacts of climate change, a good understanding of the obstacles that hinder households in responding to climate change in this research will be used as additional knowledge for households in implementing development strategies and guidelines that have been targeted by relevant parties, which aim to solve problems. climate change [36].

4. Conclusion

This research concludes that farmers' household income structure is the highest contribution from farms. South Sumatra's second-highest contribution is non-farm, and the smallest is off-farm. Central Java's second position is off-farm, and the smallest is non-farm. Based on land carrying capacity and agrarian density, despite the flood disaster, rice farming is sustainable. However, efforts are needed to prevent Flooding by making drainage channels more effective. In addition, it is necessary to adapt rice farming to floods due to climate change. In the short term, the government can provide assistance to cover the losses farmers suffer due to floods. Further research is suggested to be able to study in more detail the resilience of rice farmer to the risk due to Flooding.

5. References

- [1] Paul BK, Rahman MK, Lu M, et al. 2022 Household Migration and Intentions for Future Migration in the Climate Change Vulnerable Lower Meghna Estuary of Coastal Bangladesh *Sustainability* 2022 ; 14: 4686.
- [2] Zakari S, Ibro G, Moussa B, et al. 2022 Adaptation Strategies to Climate Change and Impacts on Household Income and Food Security: Evidence from Sahelian Region of Niger *Sustainability* 2022 ; 14: 2847.
- [3] Meert H, Huylenbroek G Van, Vernimmen T, et al. Farm household survival strategies and diversification on marginal farms *Journal of Rural Studies*; 21: 81–97.
- [4] De Silva MGMT, Kawasaki A 2018 Socioeconomic Vulnerability to Disaster Risk: A Case Study of Flood and Drought Impact in a Rural Sri Lankan Community *Ecological Economics* 2018 ; 152: 131–140.
- [5] Akukwe TI, Oluoko-Odingo AA, Krhoda GO 2020 Do floods affect food security? A before-and-after comparative study of flood-affected households' food security status in South-Eastern Nigeria *Bulletin of Geography Socio-economic Series* 2020 ; 47: 115–131.
- [6] Arora A, Bansal S, Ward PS 2019 Do farmers value rice varieties tolerant to droughts and floods? Evidence from a discrete choice experiment in Odisha, India *Water Resources and Economics* 2019 ; 25: 27–41.
- [7] Huang N Van, Nguyet BTM, Hung H Van, et al. 2022 Economic Impact of Climate Change on Agriculture: A Case of Vietnam *AgBioForum*; 24.
- [8] Nguyen TT, Nguyen TT, Grote U 2020 Multiple shocks and households' choice of coping strategies in rural Cambodia *Ecological Economics*; 167. Epub ahead of print 2020. DOI: 10.1016/j.jecolecon.2019.106442.
- [9] Ullah W, Nihei T, Nafees M, et al. 2018 Understanding climate change vulnerability, adaptation and risk perceptions at household level in Khyber Pakhtunkhwa, Pakistan *International Journal of Climate Change Strategies and Management* 2018 ; 10: 359–378.
- [10] Parida Y, Dash DP, Bhardwaj P, et al. 2018 Effects of Drought and Flood on Farmer Suicides in Indian States: An Empirical Analysis *Economics of Disasters and Climate Change* 2018 ; 2: 159–180.
- [11] ISLAM M 2022 Impacts of Climate Change on Household Income Level of the Farmers: The Case of Sarayonu District of Konya Province in Turkey *ADAM AKADEMI Sosyal Bilimler Dergisi*. Epub ahead of print 2022. DOI: 10.31679/adamakademi.1082242.
- [12] Tran DD, van Halsema G, Hellegers PJG, et al. 2019 Long-term sustainability of the Vietnamese Mekong Delta in question: An economic assessment of water management alternatives *Agricultural Water Management*; 223. Epub ahead of print 2019. DOI: 10.1016/j.agwat.2019.105703.
- [13] Smith LC, Frankenberger TR 2018 Does Resilience Capacity Reduce the Negative Impact of Shocks on Household Food Security? Evidence from the 2014 Floods in Northern Bangladesh *World Development* 2018 ; 102: 358–376.
- [14] Shrestha BB, Kawasaki A 2020 Quantitative assessment of flood risk with evaluation of the effectiveness of dam operation for flood control: A case of the Bago River Basin of Myanmar *International Journal of Disaster Risk Reduction*; 50. Epub ahead of print 2020. DOI: 10.1016/j.ijdrr.2020.101707.
- [15] Ogunpaimo OR, Oyetunde-Uzman Z, Surajudeen J 2021 Impact of Climate Change Adaptation on Household Food Security in Nigeria—A Difference-in-Difference Approach *Sustainability* 2021 ; 13: 1444.
- [16] Toulmin C 2021 Climate, Cultivation, and Household Income *Cattle, Women, and Wells* 2021 ; 34–50.
- [17] Cheng J, Lin F 2022 The Dynamic Effects of Urban–Rural Income Inequality on Sustainable Economic Growth under Urbanization and Monetary Policy in China *Sustainability* 2022 ; 14: 6896.

- [18] Saeed S, Makhadm MSA, Anwar S, et al. 2023 Climate Change Vulnerability, Adaptation, and Feedback Hypothesis: A Comparison of Lower-Middle, Upper-Middle, and High-Income Countries *Sustainability* 2023 ; 15: 4145.
- [19] Chegere MJ, Mrosso TL 2022 Climate Variability, Temporal Migration, and Household Welfare among Agricultural Households in Tanzania *Sustainability* 2022 ; 14: 14701.
- [20] Dhakal C, Khadka S, Park C, et al. 2022 Climate change adaptation and its impacts on farm income and downside risk exposure *Resources, Environment and Sustainability* 2022 ; 10: 100082.
- [21] Li M, Gan C, Ma W, et al. 2020 Impact of cash crop cultivation on household income and migration decisions: Evidence from low-income regions in China *Journal of Integrative Agriculture* 2020 ; 19: 2571–2581.
- [22] Zantsi S, Mack G, Vink N 2021 Towards a viable farm size – determining a viable household income for emerging farmers in South Africa’s Land Redistribution Programme: an income aspiration approach *Agrekon* 2021 ; 60: 91–107.
- [23] Tega M, Bojago E 2023 Farmer’s Perceptions of Agroforestry Practices, Contributions to Rural Household Farm Income, and Their Determinants in Sodo Zuria District, Southern Ethiopia *International Journal of Forestry Research* 2023 ; 2023: 15–18.
- [24] Prayitno PH, Sahid S, Hussin M 2022 Social Capital and Household Economic Welfare: Do Entrepreneurship, Financial and Digital Literacy Matter? *Sustainability* 2022 ; 14: 16970.
- [25] deRosari B, Hosang EY, Basuki T 2021 Distribution of agricultural gumption in various agroecosystem as a strategy to maintain farm household income sustainability *IOP Conference Series: Earth and Environmental Science* 2021 ; 870: 12020.
- [26] Li Q, Wu X, Zhang Y, et al. 2020 The Effect of Agricultural Environmental Total Factor Productivity on Urban-Rural Income Gap: Integrated View from China *Sustainability* 2020 ; 12: 3327.
- [27] Sharma TPP, Zhang J, Khanal NR, et al. 2022 Household Vulnerability to Flood Disasters among Tharu Community, Western Nepal *Sustainability* 2022 ; 14: 12386.
- [28] Eskander SMSU, Fankhauser S 2022 Income Diversification and Income Inequality: Household Responses to the 2013 Floods in Pakistan *Sustainability* 2022 ; 14: 453.
- [29] Rakotoarisoa MA, Kaitibie S 2019 Effects of Regular Off-farm Activities on Household Agricultural Income: Evidence from Kenya’s Kerio Valley *SocioEconomic Challenges* 2019 ; 3: 13–20.
- [30] La BT, Lim S, Cameron MP, et al. 2021 Absolute income, comparison income and subjective well-being in a transitional country: Panel evidence from Vietnamese household surveys *Economic Analysis and Policy* 2021 ; 72: 368–385.
- [31] Xu K, Shi B, Pang J, et al. 2023 The effect of participation in ecological public welfare positions on farmers’ household income composition and the internal mechanism *Journal of Cleaner Production* 2023 ; 385: 135557.
- [32] Li C, Kang B, Wang L, et al. 2019 Does China’s Anti-Poverty Relocation and Settlement Program Benefit Ecosystem Services: Evidence from a Household Perspective *Sustainability* 2019 ; 11: 600.
- [33] Amfo B, Mensah JO, Ali EB, et al. 2021 Author response for ‘Rice farm income diversification in Ghana and implications on household consumption expenditure’. Epub ahead of print 2021. DOI: 10.1108/ijse-04-2021-0207/v2/response1.
- [34] Qi P, Xia Z, Zhang G, et al. 2021 Effects of climate change on agricultural water resource carrying capacity in a high-latitude basin *Journal of Hydrology* 2021 ; 597: 126328.
- [35] Guo Z 2019 Rice carrying capacity and sustainable produce of rice in resources-limited regions *International Journal of Agricultural Science and Food Technology* 2019 ; 5: 054–057.
- [36] González-Hernández DL, Meijles EW, Vanclay F 2019 Household Barriers to Climate Change Action: Perspectives from Nuevo Leon, Mexico *Sustainability* 2019 ; 11: 4178.

Agricultural Household Economic In Condition Flood Impact Of Climate Change In Indonesia (M.Yamin)

ORIGINALITY REPORT

7%

SIMILARITY INDEX

6%

INTERNET SOURCES

7%

PUBLICATIONS

5%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of California, Los Angeles Student Paper	2%
2	discovery.researcher.life Internet Source	1%
3	Submitted to Georgia State University Student Paper	1%
4	Dewi Sahara, Joko Triastono, Raden Heru Praptana, Anggi Sahru Romdon et al. "Sorghum Contribution to Increased Income and Welfare of Dryland Farmer Households in Wonogiri, Indonesia", Agriculture, 2023 Publication	1%
5	F Aziz, I Nurhidayati, R Khairiyakh, R U Fajarningsih, E Irawan. "Food security analysis of shrimp farmer households based on the proportion of food expenditure and energy consumption in Purworejo Regency", IOP Conference Series: Earth and Environmental Science, 2024 Publication	1%

Exclude quotes On

Exclude matches < 30 words

Exclude bibliography On