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Accounting For Climate: The Role of Village Funds on Farmers' Income Using a Social and Cultural Approach

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Abstract

This study examines the role of Village Funds in supporting farmers' resilience to climate change and its implications for agricultural income using a social and cultural lens. Climate change has led to declining productivity, unstable harvest patterns, and reduced income for rural farming communities. Village Funds, as mandated through the State Budget (APBN), are designed to strengthen village development and community welfare, including climate adaptation efforts. This qualitative descriptive research was conducted in Kayu Jati Village, Ongka Malino Subdistrict, Parigi Moutong Regency, where the majority of residents depend on agriculture. Data were collected through interviews, field observations, and documentation involving farmers as key informants and village officials responsible for budget management. The study adopts Legitimacy Theory to explain how village governments justify fund allocation decisions in response to environmental and socio-cultural pressures. Findings indicate that Village Fund allocations for agriculture increased significantly between 2023 and 2024, reflecting a strategic shift toward climate-responsive programs. These programs include the construction and maintenance of farm access roads, provision of improved seeds and fertilizers, and farmer education on land use. The support of Gapoktan as a social institution also strengthens coordination and communication between farmers and the village government. Overall, Village Funds contribute positively to reducing farmers' production costs, stabilizing income, and enhancing adaptive capacity to climate variability. The study highlights the importance of integrating climate accounting principles into village financial management to ensure sustainable agricultural development.

1. Introduction

Climate change was initially perceived as a part of the Earth's natural dynamics. However, in recent decades—particularly since the onset of the industrial era—climate change has accelerated significantly. This acceleration aligns with the increase in human activities such as fossil fuel combustion and industrial expansion, which have led to the accumulation of greenhouse gases in the atmosphere.

A report by the Intergovernmental Panel on Climate Change (IPCC) indicates that the acceleration of climate change has had widespread and tangible impacts on various aspects of life, including ecosystems, human settlements, and socio-economic stability. Indicators of climate change, such as rising global temperatures, extreme weather events, and disruptions in rainfall patterns, have raised significant concerns among both the scientific community and the general public (UU No. 16, 2016). Consequently, climate change is no longer merely an environmental discourse but has evolved into a multidimensional issue that demands serious attention from all stakeholders at local, national, and global levels.

According to Suberjo (2009), there is a strong correlation between climate change and agriculture. One of the most significant implications of climate change is its impact on the agricultural sector, particularly on the productivity of food crops. As a result, climate change is projected to reduce agricultural yields by approximately 5 to 20 percent (Ummah, 2019). The Ministry of Environment (2004) stated that climate change is a condition characterized by shifts in global climate patterns, resulting in increasingly unstable weather phenomena. Climate change is a consequence of long-term alterations in climatic variables, such as atmospheric temperature and rainfall patterns, occurring continuously over an extended period of approximately 50 to 100 years (Hidayati & Suryanto, 2015). Ratnaningayu (2023) states that the instability of weather conditions is one of the contributing

factors to climate change. This is evidenced by irregular rainfall patterns, extreme increases in air temperature, and the growing frequency of strong winds and storms. The uncertainty of these climatic elements leads to atmospheric dynamics that have implications for global climate change (Uyun & Dkk, 2022).

The study conducted by Hidayati & Suryanto (2015) indicates that the majority of farmers in Jatirunggo Village have experienced direct impacts from increasingly erratic weather conditions. They reported that shifts in weather patterns have led to limited water resources and a decline in crop quality. Approximately 36% of respondents stated that they had experienced crop failure, directly attributed to unfavorable or extreme weather conditions. Meanwhile, 38% of the farmers reported changes in crop yields, particularly in terms of reduced quantity compared to previous growing seasons.

In the 2020–2024 National Medium-Term Development Plan (RPJMN), climate change has been identified as one of the national development priorities, specifically under National Priority (PN) No. 6, which focuses on environmental sustainability, disaster resilience, and climate change. One of the key targets outlined in PN No. 6 is to reduce economic losses caused by disasters and climate-related threats to the Gross Domestic Product (GDP), with a concrete goal of limiting the impact to no more than 0.35% of GDP by 2024. Climate change response has also been prioritized within the broader development agenda, as reflected in the designation of Sustainable Development Goal (SDG) No. 13: Climate Action (National Development planning Agency (BAPPENAS), 2020). The 2014 National Action Plan for Climate Change Adaptation (RAN-API) serves as a strategic national framework designed to enhance the resilience of development against the impacts of climate change. Currently, the document is undergoing a revision as part of efforts to strengthen the integration of adaptation actions into national development planning. This revision emphasizes the importance of explicitly assessing adaptation contributions so that adaptation actions can be distinguished from conventional development activities (business as usual). Therefore, a clear consensus on adaptation targets is essential as a foundation for formulating climate-resilient development plans (National Development Planning Agency (BAPPENAS), 2014).

Climate change is projected to have a significant impact on the national economy. According to existing projections, Indonesia could face economic losses ranging from 0.66% to 3.45% of its Gross Domestic Product (GDP) by 2030 if adequate mitigation and adaptation measures are not implemented (*Determined Contribution Roadmap Nationall*, 2020) . In addition to its impact on the agricultural sector, climate change also poses various other risks, including: (1) a clean water crisis resulting from increased frequency of floods and prolonged droughts; (2) degradation of terrestrial ecosystems due to forest fires and flood inundation; and (3) the potential for a food crisis affecting all living beings as a consequence of disrupted plant and animal production. The government's commitment to climate change mitigation and control is reflected in the 2020–2024 National Medium-Term Development Plan (RPJMN), where National Priority No. 6 encompasses efforts related to Environmental Development, Strengthening Disaster Resilience, and Climate Change Management. Programs supporting this priority include improving environmental quality, enhancing capacities to respond to disasters and climate change impacts, and advancing low-carbon development.

IFRS S2 applies to annual reporting periods beginning on or after January 1, 2024, with early adoption permitted, provided that the requirements of IFRS S1—General Requirements for Disclosure of Sustainability-related Financial Information—are also applied. The objective of IFRS S2 is to require entities to disclose information regarding climate-related risks and opportunities, aiming to provide relevant data to general-purpose financial statement users for decision-making related to

the allocation of resources to an entity. IFRS (International Financial Reporting Standards) are internationally recognized accounting standards used as a basis for the preparation of financial statements, developed and issued by the International Accounting Standards Board (IASB).

Climate accounting is a relatively new concept aimed at measuring, reporting, and managing the economic impacts of climate change. In rural contexts, climate accounting can serve as a vital tool to guide the allocation of Village Funds (Village Funds) toward programs that support climate change adaptation and mitigation. As a financial instrument managed by village governments, Village Funds play a strategic role in financing local initiatives to strengthen farmers' resilience to climate change. In Indonesia, regulations are increasingly oriented toward climate adaptation and mitigation. One of the key focuses is the allocation of a portion of Village Funds for climate-related actions, such as tree planting, the construction of small reservoirs (embung), and the development of more efficient irrigation systems to help farmers cope with the impacts of climate change. Village Funds may also be used to build farm roads and procure agricultural production facilities. In addition, farmer empowerment programs, training, and technological support are included in Village Fund allocations to improve the welfare and income of farmers.

In general, climate change financing is derived from two main categories: the public sector and the non-public sector. Public funding includes domestic sources such as the State Budget (APBN), Regional Budget (APBD), Public Service Agencies (BLU), the Environmental Fund Management Agency (BPDLH), as well as financial instruments such as green sukuk, both global and retail. Additionally, State-Owned Enterprises (SOEs), such as PT Sarana Multi Infrastruktur (PT SMI), also play a role in providing climate-related financing. On the international front, funding sources include mechanisms such as the Green Climate Fund (GCF), the Global Environment Facility (GEF), the Adaptation Fund, as well as support from regional and bilateral agencies, and multilateral development banks.

Meanwhile, non-public sector financing encompasses funds from sustainable financial services regulated by the Financial Services Authority (OJK), domestic private sector investments, foreign direct investment (FDI), green bond issuances by private entities, philanthropic contributions, and Corporate Social Responsibility (CSR) programs. All these funding sources—whether from private companies or SOEs—are directed toward supporting various mitigation and adaptation efforts, as an integral part of achieving environmentally sustainable development.

According to the World Bank report (2022), the proportion of the Indonesian State Budget (APBN) allocated for climate change mitigation and adaptation remains relatively low compared to the substantial financial requirements needed to achieve the country's Nationally Determined Contribution (NDC) targets. It is estimated that Indonesia requires approximately IDR 266.3 trillion annually until 2030. However, the average climate budget allocation in the APBN during the 2020–2022 period amounted to only IDR 37.9 trillion per year (based on Climate Budget Tagging data from DJA Business Intelligence – Thematic Krisna), indicating a significant financing gap. In addition to budget limitations, another critical issue is the imbalance in the distribution of funds across the three pillars of climate programs. Based on the 2021 APBN data, the largest budget portion (77.63%) was allocated to disaster resilience and climate impact mitigation programs, while only 6.15% was directed toward environmental quality improvement, and 16.22% toward low-carbon development. This disparity highlights the need for a comprehensive evaluation and realignment of climate budgeting strategies to ensure a more balanced and effective allocation across all program pillars.

Based on the explanation above regarding the issues of climate change and the budget allocation for its mitigation, this study

aims to identify programs implemented through Village Funds in the context of climate change and their impact on farmers' income. Furthermore, the study seeks to evaluate the extent to which Village Funds are allocated to the agricultural sector, assess community satisfaction with the implementation of these programs, and identify the positive impacts of Village Fund utilization in supporting agricultural development in Kayujati Village, Ongka Malino Subdistrict, Parigi Moutong Regency. Based on this analysis, the author has chosen a research title that reflects the focus and objectives of the study Accounting For Climate: The Role Of Village Funds On Farmers' Income Using A Social And Cultural Approach.

2. Research Methods

This study employs a qualitative research method aimed at gaining an in-depth and comprehensive understanding of the role of Village Funds in addressing climate change and its impact on farmers' income in Kayujati Village, Ongka Malino Subdistrict, Parigi Moutong Regency. The qualitative method was chosen for its ability to capture social phenomena and field behaviors holistically, including the role of Village Funds in efforts to improve farmers' income. This approach enables the researcher to explore in detail the processes, challenges, and factors influencing the success of Village Fund programs targeted at supporting farmers in coping with the income-related impacts of climate change. The type of research applied in this study is qualitative descriptive. A descriptive approach aims to present a structured and in-depth understanding of a phenomenon or event, based on empirical data and facts obtained directly from the field.

According to Maleong, as cited in Muttaqin (2010, p. 41), qualitative descriptive research aims to portray phenomena by systematically describing a number of variables related to the research problem without employing statistical figures. Regarding the definition of qualitative research, Taylor and Bogdan describe it as (Lomboh, 2014). According to Taylor and Bogdan, qualitative research is an approach that produces descriptive data in the form of spoken or written narratives, as well as observable behavior from the subjects under study. The main emphasis of this approach lies in presenting data as detailed descriptions of the speech and actions of research participants. Accordingly, the primary focus of this study is to gain a deep understanding of accounting practices within the context of climate, particularly concerning the role of Village Funds (Dana Desa) in influencing farmers' income. The population in this study consists of local farmers, who serve as the main informants, as well as the village officials of Kayu Jati. As stated by Sugiyono (2016), a population is defined as the entire area of generalization comprising objects or subjects that possess specific characteristics determined by the researcher (Nurasana Nurasana & Muhammad Rivandi, 2023). The sampling technique employed in this study is purposive sampling, which involves the selection of respondents based on specific criteria relevant to the objectives of the research. Primary data were collected directly from the field through interactions with the research subjects.

The data collection techniques employed in this study include interviews, observation, and document analysis. According to Riduwan (2010), the documentation method is a technique used to obtain information from pre-existing documents (Assayakurrohim & Dkk, 2023). In this study, the documents used include the Village Budget Report (APBDes) for the years 2023–2024. A non-quantitative analysis method is employed, in which data processing is not based on numerical or statistical calculations, but rather through narrative descriptions to interpret the findings. This research adopts the legitimacy theory as its theoretical framework.

3. Results and Discussion

Based on the findings obtained directly from field research, it can be concluded that the role of the Village Fund in Kayu Jati Village,

Ongka Malino Sub-district, Parigi Moutong Regency has been relatively optimal in supporting the agricultural sector, particularly in improving the income of farmers affected by climate-related issues. The following diagram illustrates the results and discussion of the research:

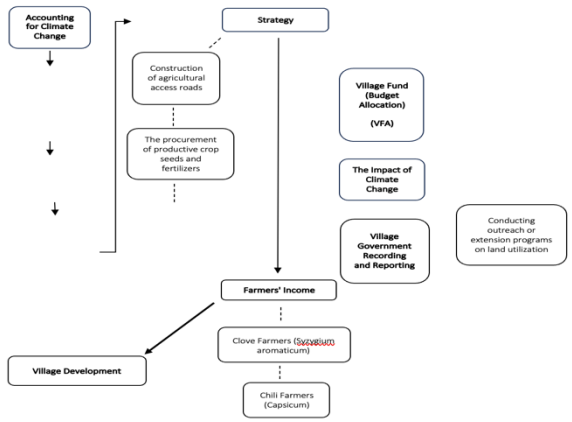

Figure 1: Results and Discussion

Based on an interview with the Secretary of Kayu Jati Village, there is a significant difference in the Village Fund budget allocation for the agricultural sector between 2023 and 2024. In 2023, the allocated budget for agriculture was IDR 50,355,000, whereas in 2024, it increased to IDR 116,200,000. This funding aims to mitigate the impacts of climate change experienced by the farming community. Climate change has affected agricultural activities in Kayu Jati Village, particularly the income of farmers. Therefore, the village government has implemented strategic measures to ensure that farmers' incomes remain optimal despite unpredictable climate conditions. Observing the climate-related challenges faced by farmers—especially their effects on harvest yields and income—the village began to prioritize agricultural development starting in 2023. Several programs and strategies have been introduced to address these issues, including the construction of agricultural access roads in 2023, the provision of high-yield seeds and fertilizers in 2024, ongoing maintenance of farming roads, and educational outreach on land utilization. It is important to note that the total area of agricultural land in Kayu Jati Village is approximately 1,233.000 hectares, with forest areas covering around 61,972.240 hectares. Additionally, the village has established a farmers' association known as Gapoktan (Association of Farmers Groups) to further support agricultural productivity and coordination.

The *Gapoktan* (Association of Farmers Groups) functions as a vital forum through which agricultural communities can articulate the challenges they face within the farming sector. These challenges commonly include inadequate infrastructure such as poorly developed farm access roads, crop failures resulting from pest infestations during the dry season, and insufficient knowledge among farmers concerning the optimal management of underutilized plantation land. The *Gapoktan* leader is tasked with systematically documenting these issues and reporting them directly to village authorities responsible for administering the Village Budget. The data collected by the *Gapoktan* serves as an essential reference for the village government in formulating targeted programs and strategic interventions to mitigate agricultural problems. Based on this input, the village government prepares a formal report outlining the proposed strategies, which is then submitted to the central government. In response, the central government allocates funding to support the implementation of these strategies at the village level, thereby facilitating assistance for farmers experiencing sector-specific difficulties. This financial support is sourced from the State Budget he State Revenue and Expenditure Budget (APBN). Furthermore, the village government is required to submit an annual financial report detailing the use of the allocated funds to both the agricultural community and the central government, thereby ensuring transparency and accountability among all stakeholders involved—namely the farming community, the village administration, and the central government.

The improvement of agricultural access roads has facilitated clove farmers in transporting their harvests directly to the

market without relying heavily on hired labor. As a result, farmers have experienced a reduction in harvest-related expenses, particularly in labor costs. In addition to this, land prices in the agricultural sector have also been positively impacted. Previously, buyers often offered low prices for farmland in Kayu Jati Village, citing poor road access as a major reason. However, with the current road infrastructure allowing motor vehicles to access the plantations, farmers are now confident in demanding higher prices for their land. In 2023, farmers experienced a widespread crop failure, particularly in chili plantations, due to pest infestations during the dry season, leading to substantial losses for many chili farmers. In response to this situation, the village government introduced a program to provide high-quality seeds and fertilizers, aiming to reduce the vulnerability of farmers to seasonal pest outbreaks. This program was funded with a budget of IDR 60,000,000 in 2024. As the program began to show positive results, farmers started to experience improvements in their yields. One notable example is the chili farmers, who benefited from the productive seeds and fertilizer assistance provided by the village. These resources enabled them to better manage their crops and protect them from pests, resulting in higher-quality harvests with increased market value.

Despite its benefits, the program has also faced criticism from some members of the farming community. Several farmers reported not receiving the seeds and fertilizers provided under the program, indicating that the distribution was not conducted equitably. According to these farmers, the village government has yet to implement the procurement and distribution of agricultural support optimally and as intended.

Based on the strategies implemented by the Kayu Jati Village government, this initiative represents the initial step in developing the agricultural sector. This development is expected to serve as a means to improve the welfare of the local community, particularly the farmers in Kayu Jati Village. Agricultural development will continue in a sustainable manner, given that climate-related issues are long-term phenomena, occurring over a span of 50 to 100 years. The growing concerns among farmers regarding the impacts of climate change have been formally reported by the village government to the central government, with the aim of securing Village Fund (ADD) allocations. These funds are intended to support agricultural infrastructure and resilience in Kayu Jati Village. Therefore, this serves as a critical point of consideration for both the village and central governments to continue striving for sustainable development funding strategies, in order to support the livelihoods of communities affected by climate change.

4. Closing

4.1. Conclusion

This study concludes that Village Funds play a significant role in supporting agricultural resilience and enhancing farmers' income in Kayu Jati Village amid increasing climate-related challenges. The substantial increase in agricultural budget allocation—from IDR 50,355,000 in 2023 to IDR 116,200,000 in 2024—demonstrates the village government's commitment to strengthening climate adaptation programs. Key initiatives funded by Village Funds, including the construction and maintenance of farm access roads, procurement of improved seeds and fertilizers, and farmer education programs, have contributed positively to reducing production costs, improving crop yield stability, and enhancing farmers' adaptive capacity.

The involvement of Gapoktan as a social and cultural institution has further strengthened coordination between farmers and village authorities, ensuring that climate-related issues are effectively communicated and addressed. However, challenges remain, particularly regarding the unequal distribution of seed and fertilizer assistance. For future development, more transparent and inclusive implementation mechanisms are required to ensure equitable benefits for all farming households.

Overall, Village Funds have demonstrated significant potential as an instrument for climate accounting at the village level, providing financial support that aligns with environmental, social, and cultural needs in rural agricultural communities.

4.2. Implications

4.2.1. Theoretical Implications

This study contributes to the discourse on climate accounting and public sector finance by demonstrating how Legitimacy Theory explains village governments' allocation decisions in response to climate pressures. The findings enrich the literature on sustainability accounting in rural contexts, particularly regarding local adaptation financing and community-centered development.

4.2.2. Practical Implications

The results emphasize the need for:

1. Integrating climate-related indicators into village financial planning and reporting.
2. Strengthening administrative capacity for transparent fund distribution.
3. Enhancing participation from farming communities in program design and evaluation.
4. Improving monitoring systems for climate adaptation projects funded by Village Funds.

These implications serve as reference points for policymakers, village governments, and development institutions seeking to optimize rural resilience strategies.

4.3. Limitations

This research has several limitations. First, the data rely heavily on qualitative methods through interviews and observations, which may limit the depth of quantifiable measurement related to climate impacts on income. Second, the study focuses only on one village, making it difficult to generalize the findings to broader regional contexts. Third, the absence of survey-based data collection (e.g., questionnaires) restricts the ability to capture wider community perceptions, particularly given the age-related challenges among respondents.

4.4. Recommendations

4.4.1. Recommendations for Policy and Practice

1. Village governments should adopt standardized climate accounting frameworks, ensuring that climate-related expenditures are clearly classified and evaluated.
2. Distribution mechanisms for seeds, fertilizers, and other support programs must ensure fairness and avoid disparities among farmers.
3. Strengthening collaboration between village authorities, Gapoktan, and agricultural extension officers to improve agricultural planning and climate adaptation training.

4.4.2. Recommendations for Future Research

1. Future studies should incorporate mixed methods to capture both qualitative insights and quantitative measurements of climate impacts.
2. Comparative studies across multiple villages or districts are encouraged to understand variations in Village Fund effectiveness.
3. Further investigation is needed on long-term economic modeling of climate-resilient Village Fund allocations to support evidence-based policymaking.

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