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The Role of Local Government in Dealing with The Impact of Climate Change on Agriculture in Bandung Regency

Septi Wulandari[1], Nandang Alamsah Deliarnoor[2], Neneng Yani Yuningsih[3].
[1]Faculty of Social and Political Sciences, Universitas Padjadjaran, wulandarisepti25@gmail.com.
[2]Faculty of Social and Political Sciences, Universitas Padjadjaran, nandang.alamsah@unpad.ac.id.
[3]Faculty of Social and Political Sciences, Universitas Padjadjaran, neneng.yani@unpad.ac.id.

Corresponding Author: wulandarisepti25@gmail.com[1]

Abstract: The agricultural sector in Bandung Regency faces significant challenges due to climate change, such as drought and flooding, resulting in a shift in the planting season. Local governments have a critical role in mitigating these impacts through three main functions, namely allocation, distribution, and stabilization. But the implementation is considered not optimal. The purpose of research is to analyze the role of the Bandung Regency Government in handling the impact of climate change in the agricultural sector through the approach of the three roles of the opinion of Musgrave: (a) the role of resource allocation; (b) the role of distribution of assistance and programs; (c) The role of farmers' economic stabilization. The method in this study uses qualitative with data collection techniques through in-depth interviews, observations of participants in several districts in Bandung Regency, and the study of policy documentation, reports, and related articles. Then the data is analyzed interactively using the Miles & Huberman model (data reduction, data presentation, verification of conclusions). The results obtained show that the role of the Bandung Regency Government has not been optimal in handling the impact of climate change in the agricultural sector.

Keyword: Agriculture, Climate Change, Local Government, Musgrave Theory.

INTRODUCTION

Indonesia is one of the countries that relies on the agricultural sector (Irham & Mulyo, 2016; Salendu, 2021), therefore most of its people work as farmers. This farmer's work is not only done by parents first but a 19-39 year old community that can be called millennial farmers because of their productive age (Novisma & Iskandar, 2023; Widiyanti et al., 2023). The agricultural sector in 2021 was that it grew 1.83% and contributed to the national economy by 13.28% (Marpaung et al., 2024), it showed that actually work in the farmers' sector had promising opportunities.

Over time the extreme climate change that occurs is a global challenge that has a significant impact on various sectors, especially the agricultural sector (Rawat, Kumar, & Khati, 2024; Abbass et al., 2022; Vogel & Meyer, 2018). Climate change itself can be seen by indicating drought, storm and flood (Ikhwali et al., 2023). Within a few years the shift in the

rainy season was felt and occurred, causing the shift in the growing season and harvest of farmers from food commodities such as vegetable, rice and crops. If drought and flood occur, it can result in crop failure and planting failure (Venkatappa et al., 2021).

The phenomena due to climate change require the role of the government in overcoming it, because climate change cannot be avoided and it is a natural phenomenon that occurs naturally (Kininmonth, 2003). But from this impact there must be a solution so that it does not have a significant impact on the community, especially those who work in the agricultural sector because the agricultural sector is very dependent on natural conditions when planting rice. In addition, in Indonesia the uncertainty of frequency and intensity in the rainy season and dry season will result in farmers who will have difficulty choosing a suitable type of plant because of changes in planting patterns that must follow the season, as well as the failure of the harvest due to lack or excess water and pest attacks (Supari et al., 2018; Naylor et al., 2007). Therefore, the role of the government is needed both the central government and regional governments to implement the rights and obligations that must be carried out in accordance with what is expected and needed by the community.

The role of the government to take part in handling the impact of climate change that occurs on farmers is as part of the function of the government's role that is indeed an obligation (Lipinska, 2015; Keohane & Victor, 2011), because the role itself is referred to as a series of behaviors that arise because of a position. If it is associated with problems that occur with the rules set, if the application is right on target and in accordance with the situation of the existing conditions in the field then it will not be too detrimental to the farmers. Thus the goal of a country that wants to prosper the people, one of which is a farmer successfully realized. However, if uncertain climate change continues to occur without any real action to overcome it, it will threaten the welfare of its citizens, especially farmers.

At the local level, one of the concerns is focused on Bandung Regency. That's because the types of paddy fields in Bandung Regency consist of technical irrigation rice fields, non -technical irrigation rice fields, and non-water rice fields. However, non -technical irrigation rice fields are the most dominant type of paddy fields managed by farmers in Bandung Regency. Rain-fed rice field productivity in Bandung Regency is correlated with rainfall patterns because the water source depends entirely on rainwater. The average annual rainfall varies according to season and region (Dewi & Whitbread, 2017; Maryono, Zulaekhah, & Nurendyastuti, 2023).

In this study the formulation will be seen by Richard A. Musgrave (1984) related to the role of government consisting of three roles, namely the role of allocation, distribution, and stabilization. The theoretical issues of this study are seen from the three roles are: First, the role of allocation refers to the role of the government in allocating resources efficiently to provide public goods and services that cannot be provided adequate by market mechanisms. Second, the role of distribution is related to the role of government in creating a fair distribution of income and wealth in society. Third, the role of stabilization refers to the government's efforts to maintain macroeconomic stability, including controlling inflation, unemployment, and economic growth.

This study aims to analyze the role of local governments in handling the impact of climate change on agriculture in Bandung based on Musgrave's theory which argues that there are three roles that must be carried out, namely allocation, distribution, and stabilization.

METHOD

This study uses qualitative research methods where this research wants to develop and describe reality and gain a comprehensive understanding. In addition, by using this method, research is involved directly into the field so that it is able to get objective data about the role of local governments in climate change that affects farmers in Bandung Regency, through the Department of Agriculture, Meteorology, Climatology and Geophysics Agency, farmers who experience it, and the village government whose citizens are affected.

This study analysis unit is the village/sub-district government where there is dry agricultural land and farmers who experience it and the Bandung Regency Agriculture Office and the Meteorology, Climatology and Geophysics Agency as well as those involved in the realization of a good role of local governments in Bandung Regency for climate change mitigation that affects farmers.

Data collected through in-depth interviews, observations of participants in several districts in Bandung Regency, and the document study of policy, reports, and related articles. Then the data is analyzed interactively using the miles & huberman model (data reduction, data presentation, verification of conclusions).

RESULTS AND DISCUSSION

The Role of Regional Government in handling the impact of climate change on agriculture in Bandung Regency in 2024 is the topic of analysis in which the role of local government will be the main theory. The role of the local government from Richard A. Musgrave which will be the theory in the analysis consists of three roles, namely the role of allocation, distribution role, and the role of stabilization. The following is an analysis or discussion related to that role.

Allocation Role

Allocation plays an important role in a policy implementation. A good allocation is an allocation that is able to meet the needs to support welfare and deal with existing problems. Local governments must be able to allocate resources fairly and evenly to encourage economic growth and community welfare (Turner and Hulme, 1997).

In this case the regional government is assisted by the central government and other parties involved in allocating a budget to help farmers. These efforts are made to ensure the availability of farmers' needs and reduce the risk of disasters caused by climate change. For allocation, it must be supported by land data collection and farmers' needs so that the intervention is right on target.

The allocation of assistance for farmers is carried out as an effort to prosper the economy in the agricultural sector. In this case the allocation is focused on previous problems regarding some of the obstacles faced by farmers due to the impact of climate change because the great aspects that affect agriculture are climate conditions.

In the budget allocation system and agricultural resources, the allocation for assistance is not carried out through the sub -district level, but directly through the Agriculture Service as an institution that has the authority in the management and distribution of various forms of support for the agricultural sector. The Agricultural Counseling and Development Agency in this case acts as the executor or facilitator responsible for implementing policies and coordinating assistance to farmer groups that meet the beneficiary criteria.

Assistance provided by the Department of Agriculture includes various aspects, including the supply of seeds, agricultural tools and machines, as well as fertilizers aimed at increasing the productivity of the agricultural sector. The entire aid program is intended for farmers who are members of farmer groups, so that the allocation of resources can be more directed and effective in improving the welfare of farmer groups and supporting the sustainability of the agricultural sector.

The implementation of budget allocation and resources in managing agricultural infrastructure efficiently becomes a crucial aspect to ensure that assistance achieves appropriate goals and provide optimal benefits for the community. In the context of this Alsintan procurement, the budget allocation is carried out based on careful planning by referring to the data of prospective farmers and prospective locations. This approach aims to optimize the use of the budget by ensuring that each intervention is in accordance with the real needs in the field.

If during a disaster such as drought or flood, close coordination with the Regional Disaster Management Agency becomes the main mechanism in ensuring the allocation of resources runs efficiently. With a special budget for disaster management, the distribution process of assistance can be carried out based on the urgency and level of impact that occurs. However, in conditions where the internal budget is inadequate, the regional government communicates officially with the Regional Disaster Management Agency to obtain additional budget and resource support.

In addition, in allocating the budget and resources also depend on the role of agricultural extension workers as the main actor in the field. Extension workers have direct access to empirical data regarding agricultural conditions, affected land area, and specific needs of farmers. The information they collect is the basis for adjusting interventions so that assistance can be given appropriately.

Although various forms of assistance have been given to support the agricultural sector, structural challenges in the availability of water remain a significant obstacle for farmers, especially in the rain-fed area. When the dry season arrives, access to water sources becomes increasingly limited, resulting in competition between users in the use of river water.

Although there is a water pump as one of the technical solutions, its effectiveness is still limited because of the distance between water sources and agricultural land. In addition, the option to purchase water for irrigation is often insufficient for farmers with land in the middle of agricultural areas, because water is difficult to reach the area.

Other problems related to water resources are the characteristics of wells that are generally shallow wells. When drought occurs, shallow wells lose their function due to limited water reserves. Meanwhile, the construction of a deep well cannot be realized because of the limited land and capital needed for its management. This is a challenge for farmers, considering the process of rice cultivation requires a fairly long time, which is around 3.5 months, so that security of water availability fluctuations becomes a crucial factor in the sustainability of agricultural production.

Thus, although the assistance program has contributed to supporting agricultural activities, a more comprehensive solution is still needed to overcome the constraints regarding existing water sources, especially related to the provision of sustainable water resources such as deep wells that will actually be very helpful if the water sources that usually experience drought.

In addition to the efficient allocation of resources, local governments must also pay attention to investment in sustainable agricultural technology in this case technology becomes a very helpful tool for farmers such as the use of superior seeds to help farmers obtain more optimal results with the use of efficient resources and many other technologies that are very useful.

Local governments have made various efforts in modernizing the agricultural sector through technology-based allocations. This policy includes the procurement of superior seeds, organic fertilizer, as well as agricultural tools and machines, such as tractors, which aim to increase agricultural productivity while facing challenges due to climate change. The implementation of this technology is expected to support food security by increasing the efficiency of production and sustainability of the agricultural system.

However, the perspective of farmers regarding the implementation of agricultural technology shows challenges in its application. Although the procurement and training related to organic fertilizer, superior seeds, and other technologies have been carried out, the transition from conventional agricultural systems to new technology is considered not fully beneficial for farmers. One of the main obstacles is the limited capital, which makes adaptation to new technology difficult, especially when the initial investment required is quite large without a guarantee of adequate return profit.

Thus, although the modernization of the agricultural sector through technology investment has been initiated to increase productivity and sustainability, social and economic

challenges in its implementation need further attention. In order for this policy to run effectively, a more inclusive approach is needed, both through the provision of incentives for farmers and strategies that are able to attract the younger generation more systematically in the agricultural sector.

Distribution Role

In this case the role of distribution is an equally important role than the role of allocation. This distribution is a form in realizing what has been allocated before. The role of distribution is a form to ensure assistance held by the government can reach farmers in an efficient and effective way.

Agriculture plays a key role in achieving food security. Food security is not only about food availability, but also about fair access and distribution. Therefore, the form of distribution from the government to farmers is the distribution of social security or other assistance that have been previously allocated.

In an effort to increase the resilience of the agricultural sector, the government, both at the central and regional levels, has provided various forms of assistance to support farmers. The assistance includes agricultural tools and machines, such as tractors and water pumps, fertilizer and seed subsidies, as well as insurance schemes for farmers affected by disasters due to climate change.

The mechanism of agricultural insurance assistance is based on the active participation of farmers in the program. Only farmers have registered in the insurance scheme who are entitled to submit claims for losses experienced. This program is claimed to be an equitable and targeted system, considering that only farmers who actively join and meet the requirements that can obtain compensation. One of the main requirements is that the level of land loss due to disasters must reach more than 70% so that farmers can receive replacement claims.

On the other hand, the level of awareness and adaptation of farmers to climate risk is increasing. They have begun to utilize information from the Meteorology, Climatology and Geophysics Agency to mitigate the potential for drought or flooding. Although the existence of insurance provides financial protection, farmers continue to prioritize mitigation strategies as the main step in maintaining their land productivity. The decision to progress or back down in the planting schedule is part of an effort to adapt to climate change in order to minimize the risk of crop failure.

In addition, in the subsidized scheme, the allocation of assistance such as the allocation of fertilizer urea is given directly by the central government. Meanwhile, seed assistance is more grant and managed by the district government. This grant mechanism is intended for farmer groups affected by disasters and experienced crop failure, where they can be prioritized to receive seeds as a form of replacement in the following season. While fertilizer and seed subsidies from the center are more structural, with a recording system through group needs data reports to ensure structured transparency and distribution.

The types of seeds and fertilizers that are subsidized have been determined by the central government, so farmers do not have the freedom to choose varieties directly. If farmers want certain varieties, they can buy it independently or apply for a farmer group. If there is an allocation of grant funds from the regional revenue and expenditure budget, the application can be considered and endeavored to be in accordance with the needs of farmers. This system is complementary, where farmers can submit a request in advance, and if there is a chance of funding, the assistance will be adjusted to their preferences.

Thus, the agricultural assistance policy does not only function as an instrument of protection against disaster risk, but also as part of a broader food security strategy. Periodic policy evaluation and adjustment is needed to ensure the effectiveness of government intervention in supporting the sustainability of the agricultural sector.

In the dividing social security or other assistance the local government also needs to balance the efficiency that exists with equity. Because the existence of an efficiency program now affects many aspects, so the government must be able to map whether the existing assistance can be carried out evenly or not.

In the context of balancing efficiency with equitable distribution of assistance, there are differences in access to information between local governments and extension workers involved in the agricultural sector. The Agriculture Office which is at the upper middle level in the structure of assistance management has limitations in understanding directly whether assistance has been spread evenly in the community. Conversely, extension workers as an extension of interaction directly with farmers are considered to have a more specific understanding of the conditions on the ground.

Realizing this limitation, direct monitoring and evaluation mechanisms are identified as one way to obtain a more accurate picture of the distribution of assistance. However, due to limited resources and time, the implementation of monev cannot be done continuously. Therefore, the alternative strategy applied is to request reports from extension workers as a form of coordination that allows decision making to remain data -based even though it is not always obtained through direct observation.

In the perspective of Richard A. Musgrave related to the distribution function in fiscal policy, this reflects efforts to ensure distribution justice, which not only depends on planning at the macro level, but also on information obtained from field dynamics.

Because of the limitations that exist in local governments, it is necessary to improve the quality and empowerment appropriate for farmers so as to create farmers who can create food security without ignoring their welfare.

In an effort to improve the quality of services to farmers, programs are designed to support the quality of service from local governments effectively. Another strategy implemented is the placement of extension workers in various regions, which allows easier access to farmer groups. The existence of extension workers in each region functions as a bridge of communication between government policies and the real needs of farmers in the field.

In addition, technical guidance and socialization activities are also an approach to farmers' empowerment. Participants in this activity consisted of extension workers and representatives of farmer groups, with restrictions on the number of participants to ensure the effectiveness of communication. The information transfer model used in this activity is a tiered distribution system, where representatives of farmer groups participating in Bimtek and socialization are responsible for conveying the knowledge gained to other group members. However, along with the empowerment efficiency policy, the number of participants in the activity experienced a reduction, which could have implications for the range of information distribution.

In terms of distribution of assistance, administrative mechanisms have been designed to reduce the potential for conflict at the farm group level. One of the steps applied is the use of the minutes of the handover in the distribution of assistance, which must be signed by the Chairman of the Farmers Group to ensure transparency and accountability. The number of facilities received is officially recorded in the document, and each assistance must be taken directly by the Chair of the Farmers Group, accompanied by the Chairperson of the Farmers Group and "Babinsa" (Military name at the village level). This mechanism aims to minimize the potential for dissatisfaction or unclear regarding the amount of assistance received by farmer groups.

If it is associated with Richard A. Musgrave's theory regarding the distribution function in fiscal policy, this system can be understood as an effort to ensure justice in access to agricultural assistance. Approaches that combine elements of transparency, administrative control, and involvement of local actors play an important role in maintaining the effectiveness of farmers' empowerment policies.

The distribution of agricultural assistance distributed by the Agriculture Office to the Majalaya Agricultural Extension Center shows various forms of assistance that includes aspects of agricultural infrastructure and input. The physical assistance provided is often in the form of the construction of pump houses and irrigation channels, which aims to increase farmers' access to water resources. In addition, other support received includes seeds, fertilizers, water pumps, and agricultural equipment such as tractors. However, the aid allocation policy underwent changes in accordance with the priorities set at the national level. In recent years, the distribution of tractors has declined because the Ministry of Agriculture has focused more on the irrigation sector, especially in response to the impact of the El Niño phenomenon which increases the urgency of water access for agriculture.

In the distribution process, there are challenges related to equitable assistance. In Majalaya, there are 75 farmer groups that operate, but the allocation of assistance available only includes 30 groups each year. With this limitation, the distribution of assistance is carried out in stages, so that farmer groups that have not received assistance are expected to get an allocation the following year. This distribution model shows a balance between efficiency in the distribution of available resources and efforts to ensure distribution of assistance in the long run.

The distribution of assistance for farmer groups faces complex challenges, especially related to the equity and efficiency that exists. Although many farmer groups need assistance, the decision making mechanism carried out by the Department of Agriculture in distribution is based on priority needs at the sub -district level. This resulted in a group that still did not get assistance despite submitting an application through the official route of the Agriculture Service.

Limited assistance from the local government encourages the search for alternative sources of other assistance, such as support from members of the council and political parties. In this case, political parties act as one of the actors who can distribute assistance more flexible to farmer groups in need. For example, assistance in the form of tractors given to farmer groups in the upper region shows that access to resources does not only depend on the government distribution mechanism, but also on the relationship and closeness of farmer groups with those who have the capacity to provide additional assistance.

The role of executive executives is executive, where their duties are mainly focused on carrying out the main duties (main tasks and functions) set by the Department of Agriculture. As part of a broader government structure, extension workers are not authorized to determine policies directly, but act as policy implementers that have been designed by the Agriculture Office.

The continuity between the Agriculture Office and Extension Workers is a crucial aspect in the implementation of policies to improve the quality of services and empowerment of farmers. When the Agriculture Office sets a change in the service system or designing a new program to empower farmers, the instructor plays a role in adapting and implementing the policy at the field level.

The distribution of assistance in the agricultural sector has an important role in improving farmers' welfare and supporting food production stability. However, based on the results of the interview, there are challenges in the aspect of equitable assistance that are still issues in several regions. The proximity factor with the legislature or the council is one of the variables that affect the priority of receipt of assistance, because more direct access to the decision making center allows certain groups to get a greater allocation than others.

This phenomenon raises the perception that the quality of the governance of assistance distribution still needs to be improved, especially in terms of transparency and equality. When farmers who do not receive assistance question the reasons behind the imbalance, the government often responds with the argument that assistance must be given to groups who need more given the limited amount of assistance available. Although this reason can be justified in

the context of limited resource management, the mechanism used in determining the recipients of assistance needs to be further evaluated so as not to cause social and economic gaps between the farmers.

In addition, the uniform assistance distribution approach in various regions without considering the specific characteristics and needs of each region can contribute to policy ineffectiveness. Each farming community has different conditions, both in terms of access to resources, dominant types of agriculture, and welfare levels. Therefore, a more local needs-based strategy is needed to ensure that assistance really reaches the group that most needs without inequality due to non-technical factors.

More broadly, this problem also reflects challenges in the policy system that still faces obstacles in aspects of equity and effectiveness of implementation. Evaluation of the mechanism of distribution of assistance and increasing transparency in the decision making process can be a strategic step in improving the existing system, so that the distribution of assistance can run more fairly and support the sustainability of the agricultural sector as a whole. With a more inclusive and needs system based, equitable assistance can be achieved, and farmers' confidence in government policies can be increased.

Stabilization Role

Local governments must have a role in stabilization in all aspects and all sectors, especially in the agricultural sector. Because of the policy regarding food security, the right role of stabilization can avoid interference with economic growth, security, and people's welfare. Stabilization is a form of protection for farmers so as not to be eroded in economic turmoil, vulnerability to natural disasters and business risks and market systems that are not in favor of farmers.

In an effort to maintain the price stability of agricultural commodities in the market, direct intervention on price mechanisms is often outside the authority of agricultural agencies. Therefore, the main responsibility in price management is more submitted to the Logistics Affairs Agency as an institution that has a mandate in the stabilization of food prices.

However, as part of a holistic strategy in ensuring market balance, the Agriculture Service plays a significant role in optimizing from upstream, especially in maintaining the stability of rice production. This effort aims to ensure that production remains at an adequate level, so that the imbalance between demand and supply can be minimized.

In addition, the Agriculture Office also initiated the direct market program as one of the alternative marketing mechanisms. This program allows farmers to sell their crops directly to consumers, so as to reduce the distribution chain and increase transaction efficiency. The initiative mainly involves farmers with extensive land coverage, especially in the horticultural crop sector, in order to strengthen market access and improve farmers' welfare. Thus, although price stability in the market requires coordination with various institutions, the direct production and marketing -based approach is an integral part of creating economic balance for the agricultural sector.

Government policy regarding grain absorption has had a positive impact for farmers by ensuring a more profitable selling price than transactions with middlemen. Through this scheme, grain can be sold to the Logistics Affairs Agency at a price of Rp6,500 per kilogram, higher than the price offered by middlemen, which ranges from Rp6,000 to Rp6,200 per kilogram. This difference in policy reflects significant changes compared to previous years, where the price set by the Logistics Affairs Agency is even lower than the market price offered by middlemen.

However, the implementation of this policy also faces operational challenges, especially in the capacity of the Logistics Affairs Agency in accommodating and managing the incoming grain stock. The surge in volume due to the implementation of the policy made Bulog have to cooperate with the Indonesian National Army as an intermediary between the community and

the Logistics Affairs Agency. Besides functioning as a liaison, the army together with the Logistics Affairs Agency also tried to find land that can be used to accommodate grain before further processing.

In the Cileunyi region, several supporting infrastructure has been available, including two locations owned by residents with rice grinding machine facilities. This process allows grain that has been ground into rice and then sent to the Logistics Affairs Agency as part of the supply chain. It is important to note that the Logistics Affairs Agency does not directly buy grain from farmers or rent land for storage. The remaining land belongs to farmers, and the purchase of grain is carried out by the partner of the Logistics Affairs Agency after the harvest process is complete.

In addition, there are structural challenges in the practice of grain sales by farmers. Some farmers face capital limitations when they enter the planting period, so they are forced to make loans to middlemen to obtain fertilizer and finance maintenance operations. The consequence of this scheme is the necessity of selling crops to middlemen with prices under Rp6,500 per kilogram.

In the Cimekar region, grain sales patterns also have their own characteristics. Local farmers are more accustomed to selling grain after the drying process, because the selling price is dry can reach Rp8,000 per kilogram. However, the partner of the Logistics Affairs Agency only receives grain in wet conditions, so there are challenges in changing farmers' habits that have been going on for a long time. Changes in this system need to be done in stages so that they can be adopted effectively without causing disruption for farmers.

The grain absorption program ("Sergap") is a strategic initiative that aims to stabilize the price of grain and provide convenience for farmers in selling their crops without having to go through a negotiation process that is often complicated with middlemen. Based on interviews conducted, farmers feel the significant benefits of this program, especially in the aspect of transaction ease. They only need to contact related parties to schedule sales time, with guaranteed payment in cash or by transfer, even in sudden sales conditions.

For farmers who have a side job, the "Sergap" program helps reduce the workload, especially in the grain drying process. Uncertain weather factors, such as the wet dry season which causes lack of optimal sunlight, often becomes a challenge in drying grain. However, this program provides an alternative for farmers to directly sell grain without having to go through the process. Nevertheless, some farmers still choose to dry grain before selling it in the hope of getting a higher selling price.

On the other hand, the socialization of the "Sergap" program in some regions is still considered less optimal. Some farmers only know the existence of this program during the harvest, so that not all can use the facilities provided properly. Luckily, some farmers who do not have a bond with middlemen can immediately adapt and take advantage of the program. This finding shows the need to increase socialization and dissemination of information so that more farmers can use this program to the fullest and improve their welfare.

Crisis management in the agricultural sector requires a systematic approach that includes compliance with government policies, climate change mitigation, and rapid and effective emergency response coordination. The first step in dealing with the crisis is to follow the recommendations and regulations set by the government, which aims to provide guidance for farmers in carrying out sustainable and adaptive agricultural practices on environmental challenges.

One of the main strategies in mitigating the impact of climate change is the selection of plant varieties that are in accordance with weather conditions. In dealing with drought, farmers can choose the variety of early rice rice that has a shorter growth cycle and is more resistant to minimal water conditions. In addition to the selection of varieties, the planting time factor is also an aspect that needs attention. Farmers are encouraged to plant rice with a faster harvest period to reduce the risks caused by extreme weather changes.

Furthermore, water resource management becomes an important element in agricultural sustainability. Optimal irrigation techniques play a role in determining the amount of water available for plants. One effort that can be made is the construction of reservoirs as water reserves, which serves to maintain water availability in the dry season and support the efficiency of water use in irrigation systems.

In an emergency situation due to the environmental crisis or other external factors, rapid and structured coordination between various parties becomes a crucial aspect in prevention efforts. Cooperation between farmers, government, and related stakeholders needs to be strengthened to ensure appropriate and effective responses. With good coordination, the handling of crisis can be done more efficiently, so that the resilience of the agricultural sector is maintained and the negative impact on production can be minimized.

The crisis management strategy and emergency response in the agricultural sector are an important aspect in maintaining food security, especially in the midst of the challenges of climate change. Based on the results of the interview, the approach applied in two different regions, namely Solokan Jeruk and Majalaya, shows a variety of strategies that are tailored to local conditions and the availability of resources. The difference in strategy applied in these two regions reflects the importance of adaptation based on local context in agricultural management. With a responsive policy on local environmental and socio-economic conditions, the resilience of the agricultural sector can be more maintained, ensuring productivity remains stable amid the challenges of climate change.

Crisis management strategies and emergency response due to climate change in the agricultural sector requires a local participation and adaptation approach. One mechanism that is often applied is discussion and coordination between farmers and agricultural instructors. This approach allows direct exchange of information related to the problems faced by farmers in the field and solutions that can be implemented in accordance with local conditions.

The continuous discussion process between farmers and extension workers play an important role in forming a more responsive strategy to potential disasters due to climate change. Through intensive communication, farmers can gain a better understanding of mitigation and adaptation steps, including the selection of plant varieties that are in accordance with weather conditions, the application of efficient irrigation techniques, and alternative cultivation systems that are more resistant to environmental changes.

In addition, this coordination effort also serves to minimize the risk of losses that can be experienced by farmers due to extreme climate conditions. With the planning based on consultation and joint analysis, the strategies produced are more targeted and have a higher level of success in anticipating environmental challenges. This approach is not only oriented towards agricultural resilience, but also strengthens the social and economic aspects of farmers through a more inclusive adaptation system and based on real needs in the field.

The crisis in the agricultural sector, especially due to natural disasters such as drought and flooding, has a broad impact not only for farmers but also for the community as a whole. One of the most obvious consequences is the increase in the price of basic commodities, especially rice, which occurs when production has decreased. This causes economic burdens for community groups who do not have arable land, because they have to buy rice at a higher price while their income does not increase.

Conversely, farmers who have arable land are generally more prepared to face fluctuations in rice prices because they have reserved crops to meet household needs within a certain period of time. This food reserve mechanism allows them to continue to have access to rice without having to be directly affected by the price surge in the market.

In the policy context, the government has a crucial role in stabilizing the price of staples to remain affordable for the whole community, especially in an emergency situation due to natural disasters. The steps that can be taken include increasing national food reserves, optimizing the distribution of rice through price stabilization programs, as well as providing

subsidies or assistance to vulnerable groups that are affected. In addition, food diversification policies can also be a long -term solution by encouraging people to consume alternative food sources that can sustain food security in crisis situations.

With a more inclusive approach in the management of crisis and emergency response, the government can ensure that the impact of natural disasters on the price of staples does not further aggravate the economic burden of the community, so that food security is maintained in various conditions.

Sustainable development in the agricultural sector is a crucial element in achieving national food security as well as opening full employment opportunities for the community, especially the younger generation. The government has established various programs to support this sector, such as evaluating policies that have been implemented, optimizing programs that promise production stability, as well as the development of innovations that encourage the involvement of all age groups, including young people. These steps aim to ensure that agriculture remains an attractive sector and does not experience land conversion into an industrial area.

One of the proposed strategies to attract the interest of the younger generation is the provision of agricultural tools and machines, such as water pumps and tractors, which require operators with special skills. With the nature of young people who tend to want to learn new things, modern agricultural technology can be an opportunity for them to be involved in agriculture more actively. In addition, the government also seeks to minimize the risk of loss through various policies that provide certainty in the agricultural process. The millennial farmer program is a form of policy that is being intensified to encourage farmers' regeneration with a more adaptive approach to the times.

However, the challenges in regeneration of farmers cannot be ignored. Reality in the field shows that these programs have not had a significant impact in attracting the interest of the younger generation. Social and cultural factors, such as prestige and preferences for more stable work and do not require severe physical work, become the main obstacle in attracting young people to the agricultural sector. Many young people from farmers' families prefer to work in factory because their income is considered more certain and the work offered is lighter than being a farmer.

In addition, the similarity of policies in various regions without considering differences in local potential is also a factor that needs attention. Each region has different agricultural characteristics, both in terms of environmental conditions, work culture, and the interest of the younger generation towards the sector. Uniform policies throughout the region can hamper the effectiveness of farmers' regeneration programs, because not all regions have the same readiness or potential in adapting these changes. Therefore, a more flexible approach is needed and based on local needs so that the programs implemented are more targeted and are able to have a significant impact in efforts to regenerate farmers.

Taking into account social, cultural, and regional potential factors, sustainable development strategies in the agricultural sector need to be designed more contextually and inclusively. Adapting policies based on local conditions and changing the paradigm of work in the agricultural sector to be more modern and attractive to the younger generation is a strategic step in ensuring food security and the sustainability of the farm profession in the future.

CONCLUSION

First, in the role of allocation it is said that ideally an allocation role must be designed to achieve efficiency, justice, and sustainability that is in accordance with the needs of the community in this context, namely farmers. When viewed in the theory put forward by Richard A. Musgrave, the function of government allocation aims to overcome market failure and ensure that resources are used optimally. But some aspects that exist in the role of allocation that refers to Richard A. Musgrave's theory as a whole in reality is not yet perfect.

In the aspect of allocation that is carried out efficiently, the regional government allocates resources such as budgets, seeds, agricultural equipment, and water pumps based on data on farmers' needs and coordination with the Regional Disaster Management Agency for disaster management. However, challenges such as limited water and infrastructure still hamper the effectiveness of allocation.

In the investment aspect in sustainable agricultural technology, the government adopts technology such as superior seeds, organic fertilizer, and Alsintan (tractors, water pumps) to increase climate productivity and adaptation. However, the adoption of agricultural technology is constrained by limited farmers' capital to use the technology because the production produced by farmers when continuing to use the technology when the drought/flooding will reduce the income earned.

In the aspect of counseling to farmers related to climate adaptation, extension agents play an important role in conveying information about climate change and adaptive farming techniques. The main obstacle is the rejection of farmers because of the difficulty of adapting farmers to new innovations delivered by extension workers as a form of adaptation of climate change due to still believe in traditions and mismatching with local practices that farmers usually do and use.

Second, the distribution role has a fundamental significance in ensuring the welfare of the community, especially farmers evenly. The ideal distribution is not only oriented towards equitable resources, but also considers social justice and economic efficiency. This distribution is carried out as one of the main functions of the government in correcting the imbalances that arise due to market mechanisms.

In the aspect of the distribution of social security or other assistance such as Alsintan, fertilizer subsidies, and agricultural insurance are channeled through the Department of Agriculture and Farmers Groups or related parties. The Mechanism of the Handover Minutes is used to ensure transparency, although there are still complaints about inequality.

In the aspect of balancing between the efficiency that exists with the equity carried out, the distribution of assistance is prioritized based on the needs of the sub -district, but the budget constraints caused several farmer groups to have not been helped. Equity is also influenced by non-technical factors such as closeness to the legislature.

In the aspect of improving the quality of services and empowerment of farmers, more effective quality of service is done in order to help farmers is to implement programs that help farmers and socialize new innovations. The technical guidance and socialization program is also carried out to empower farmers, even though the number of participants is limited due to efficiency policies. Extension workers become the frontline in bridging government policies with field needs.

Third, the role of stabilization which is one of the main functions of the government in maintaining macroeconomic balance and ensuring the sustainability of economic growth. Stabilization aims to overcome economic fluctuations, especially in the agricultural sector, which can cause instability such as a prolonged economic slowdown or high unemployment. Overall, the ideal role of stabilization must be able to maintain a balance between economic growth, price stability, and community welfare and in this case farmers as the main object in the agricultural sector.

In aspects of stable price and market policies, where programs such as grain absorption help farmers sell yields to the logistics affairs agency at a higher price than middlemen. However, the capacity of limited logistics affairs and the habits of farmers to sell dry grain is a challenge.

In aspects of crisis management and emergency response, strategies that can be carried out to manage crisis for disasters that may occur due to climate change such as drought and flooding include the selection of climate resistant varieties, construction of reservoirs, and emergency response is by coordinating with related parties. But what is done by the local

government is still not enough to be alert in the management of the crisis because in areas such as orange solokan which is one of the central rice in Bandung Regency has proposed a deep well carried out by instructors who have coordinated with farmers because farmers who know the condition of their own land to face drought that will often occur but have not been realized.

In the aspect of support for sustainable development so that the occurrence of full employment opportunities, the government encourages farmers 'regeneration through millennial farmers' programs and utilizes Alsintan to attract the younger generation. However, young people's interest is still low because of negative perceptions of work in the agricultural sector.

Of the three roles of the local government above, it is simply concluded that the role of allocation, distribution role, and the role of stabilization slowly began to be quite good. The main challenges he faces include budget constraints, rejection and difficulty adapting farmers to changes, and lack of regeneration of farmers, so that the need for an inclusive approach based on local needs and increased transparency of assistance distribution and its benefits so that farmers know the changes that occur and the existence of incentives to attract young people. In order for the role of this government to get optimal results, periodic evaluations are also needed to ensure the sustainability and suitability of the achievement of the specified targets. Thus, the role of local government in the allocation, distribution, and stabilization can contribute to food security in order to achieve according to plan despite the need for other improvements to overcome the challenges that exist.

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