

IMPLEMENTATION OF FOOD RESERVE REGULATION IN SUMENEP DISTRICT

Nur Hayat

Master of Public Administration Program,
Faculty of Social and Political Sciences,
Universitas 17 Agustus 1945 Surabaya,
nurhayatsumenep@gmail.com;

V. Rudy Handoko

Master of Public Administration Program,
Faculty of Social and Political Sciences,
Universitas 17 Agustus 1945 Surabaya,
rudihandoko@untag-sby.ac.id;

Achluddin Ibnu Rochim

Master of Public Administration Program,
Faculty of Social and Political Sciences,
Universitas 17 Agustus 1945 Surabaya,
didin@untag-sby.ac.id;

ABSTRACT

This study evaluates the implementation of regional regulations on food reserves in Sumenep Regency to strengthen local food security. The regulation aims to manage food reserves, stabilize supply, and address potential food crises caused by natural disasters or price fluctuations. This research examines the application of the policy and factors influencing its success or failure. A descriptive qualitative method was employed, collecting data through in-depth interviews with local government officials, farmers, and beneficiaries. Field observations and document analysis complemented the interviews. The findings reveal that while the regulation was implemented to enhance food security, challenges remain, including budget constraints due to COVID-19 and Foot-and-Mouth Disease, limited inter-agency coordination, and low community participation. Technical issues, such as inadequate storage and distribution facilities, further hinder implementation. However, positive factors include government commitment, human resource development, and active community and private sector involvement. The study recommends improving stakeholder collaboration and strengthening monitoring and evaluation systems to ensure effective and sustainable food reserve policies in the future.

Keywords: *Food Reserves, Local Regulations, Sumenep*

A. INTRODUCTION

Food security is one of the strategic issues of global, national and regional concern (Campbell dkk., 2024; Nguyen dkk., 2024; Pandey & Mishra, 2024). Food security is defined as a condition in which all people, at all times, have

physical, social, and economic access to sufficient, safe, and nutritious food to meet the needs of an active and healthy life. Food security includes not only food availability, but also ensuring that every individual has adequate nutrition to live a healthy, active and productive life. Sumenep district, one of the districts on Madura Island, East Java, has great potential in the agricultural sector (Gidelew dkk., 2024; Tesafa dkk., 2024; Xu dkk., 2025).

It consists of 27 sub-districts, 334 villages and a total population of 1,133,800 people. Most of the Sumenep district is an agricultural area with the contribution of the agricultural sector to GRDP reaching 38.87% in 2021, although it decreased by 1.06% compared to the previous year. With great potential, Sumenep district is one of the important food suppliers for the surrounding areas. However, challenges such as price fluctuations, climate change and uncertainty in food supply are still obstacles that must be overcome.

As a strategic step, the Sumenep district government has enacted the *Peraturan Daerah Nomor 05 Tahun 2020* on the Implementation of Food Reserves. This regulation aims to improve food security through efficient and effective management of food reserves. This policy is also in line with the mandate of The *Undang-Undang Nomor 18 Tahun 2012* on Food and the *Peraturan Pemerintah Nomor 17 Tahun 2015* on Food Security and Nutrition. Both regulations emphasize the importance of preparing integrated food and nutrition information as the basis for planning, monitoring, supply stabilization and early warning systems against food problems (Enquan dkk., 2024; Pratiwi dkk., 2021; Shao dkk., 2021).

Although a policy in the form of a local regulation has been issued, the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* Program still needs to be evaluated. This evaluation is important to understand the extent to which the policy has succeeded in achieving its stated objectives, as well as to identify supporting and inhibiting factors in its implementation. In this context, this study aims to analyse the program implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* in Sumenep district, particularly in maintaining food availability and improving food security at the local level (Huang dkk., 2025; Khojasteh dkk., 2025).

Previous studies relevant to this topic include research by Wicaksono dkk. (2023) on the implementation of the food reserve program in Sumenep District, Lailatul dkk., (2024) on the implementation of food security policies in Blitar District, and Qomariyah & Hamid (2023) on the Food Independent Village policy in Bantul District. These three studies provide insights into the implementation of food policies in various regions, but this study has a different focus. This study more specifically evaluates the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* in Sumenep district with an approach to identify the supporting and inhibiting factors of the policy.

This research raises two main questions: how is the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* on the Implementation of Food Reserves in Sumenep District, and what are the supporting and inhibiting factors in the implementation of the policy. The results of the study are expected to contribute to the Sumenep district government in improving the effectiveness of

the food reserve policy, as well as serve as a reference for strategic decision-making related to food security at the local level.

B. LITERATURE REVIEW

Food security is closely related to efforts to improve the quality of human resources. This means that without the support of adequate and quality food availability, it will be difficult to create or produce quality human resources. Thus, in order to realize the success of national development, a good food security system is certainly an absolute requirement that must be created. In addition, based on the *Undang-Undang Nomor 18 Tahun 2012* on Food, it is explained that food security is the fulfillment of food needs for the country to the individual level as measured by sufficient quantity, good quality, safety, diversity of types and nutritional adequacy (Faridudin dkk., 2022; Mozaffarian dkk., 2024; Samaddar dkk., 2025).

The main pillars of food security as stated in the *Undang-Undang Nomor 18 Tahun 2012* on Food are availability, affordability and stability. Availability in food security can be fulfilled from domestic or foreign production. Affordability can be seen from the physical presence of food, which of course must be near consumers and able to be purchased at affordable prices. While stability is food supply or in other words food reserves that are available continuously so that price stability can be maintained. With these three pillars, it is hoped that the issue of food availability for all groups and individuals can be resolved (Calhoun-Grosch dkk., 2024; Said & Syafey, 2021; Shafiee dkk., 2022).

Meanwhile, in food security, an important aspect that needs to be considered is food reserves. Food reserves are food supplies located throughout the region intended for human consumption from groups to individuals when facing food shortages, supply and price disruptions, and emergencies. Food reserves are an important security measure so that the value of food security formed is maximized. This means that good food security can be achieved by developing food reserves to be able to withstand changing conditions. In other words, food reserves are an important aspect of food security, therefore it is important to develop food reserves in a region as stated by Anggasari and Saputro, namely regions that have good food reserves tend to be able to overcome food insecurity problems (Akbar dkk., 2024; Belesky, 2014; Moussa dkk., 2024).

Food reserves are an important aspect of the food security system. Adequate food reserves in terms of quantity, safety and quality must be continuously available and easily accessible to every group and individual so that the fulfillment of food needs is guaranteed at all times under various conditions. Thus, strengthening food reserves from the largest to the smallest level is important to be considered carefully (Wu dkk., 2025).

In line with the previous definition, food reserves are an important food source to maintain the stability of food supply when it is outside the harvest season and areas experiencing food deficits. Basically, food reserves are built on the basis of two different but complementary reasons, namely: Ensuring food availability aimed at protecting the population in the event of a food emergency; and in order to create price stabilization. Price stabilization means buying food at

a standard price during the peak harvest so that farmers are not affected by a sharp decline in prices and reselling it at a standard price during the famine to help consumers from high price increases. Sumenep is considered an area that supplies a lot of food reserves (Zaplate dkk., 2021).

The factors that affect the decline in the value of food reserves in an area are climate, unequal harvest seasons and emergencies such as natural disasters. Poor climate factors can cause floods and droughts in a fairly long period of time so that some areas experience crop failure. The harvest season factor is not the same in each region, so food consumption must still be fulfilled from the region's production even though the production level is small. Meanwhile, emergency factors such as natural disasters can cause some regions to be difficult to produce food so that they cannot meet the level of food consumption of the people in their own area. However, factors that hindered the realization of this reserve program were covid-19 and Foot and Mouth Disease (FMD) which resulted in budget reallocation (Rasmussen dkk., 2023; Sirdar dkk., 2024).

Food reserves in the Unitary State of the Republic of Indonesia (NKRI) are stipulated in *Undang-Undang Nomor 18 Tahun 2012* on Food. The law explains that the organization of food reserves is carried out by procurement, management and distribution including the central government, local governments and the community. The food reserves stipulated in this law are available through domestic and foreign production.

The Sumenep district food security and vulnerability map villages and sub-districts are classified into six food security and nutrition groups based on the severity and causes of the food security and nutrition situation. Priority 1,2 and 3 villages/kelurahan are medium food vulnerable areas, and priority 3 is low food vulnerable. Priority 4, 5 and 6 villages/kelurahan are food secure areas with a classification of priority 4 as low food security, priority 5 as medium food security, while priority 6 is high food security.

The results of the FSPA analysis show that there are 25 priority 1-3 food insecure villages out of 334 villages, consisting of 5 priority 2 villages and 20 priority 3 villages. Priority 2 villages are spread across 3 sub-districts, namely 1 village in Gayam sub-district, 1 village in Kangayan sub-district and 3 villages in Sapeken. Priority 3 villages are spread across 12 sub-districts; 1 village in Bluto sub-district, 1 village in Saronggi sub-district, 1 village in Lenteng sub-district, 2 villages in Dasuk sub-district, 1 village in Batuputih sub-district, 3 villages in Batang-Batang sub-district, 3 villages in Nonggunong sub-district, 1 village in Gayam sub-district, 2 villages in Raas sub-district, 2 villages in Sapeken sub-district, 2 villages in Arjasda sub-district and 1 village in Kangayan sub-district.

C. METHOD

This research is a qualitative study with a descriptive approach that aims to describe the implementation of the food reserve policy in Sumenep district. This approach was chosen because the research produces descriptive data in the form of written or spoken words from informants, as well as observations of relevant behavior. The policy analysis model used is the policy implementation model of George C. Edward III, who identified four main variables that influence the

success of policy implementation, namely communication, resources, disposition, and bureaucratic structure (Sirdar dkk., 2024).

Communication is defined as the process of delivering policy information measured through clarity, consistency, and effectiveness of information delivery. Resources include the availability of human, financial, and material resources measured by quantity, quality, and adequacy. Disposition refers to the attitude, commitment, and motivation of policy implementers towards the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020*. Bureaucratic structure involves procedures, regulations, and coordination between related institutions that support policy implementation.

This research uses a case study design to explore in depth the implementation of the policy. The research subjects consisted of officials from the Sumenep District Food Security and Agriculture Office, other stakeholders such as farmers, beneficiary communities, and those involved in policy implementation. Informants were selected using a purposive sampling technique based on their relevance to the research topic.

Data was collected through in-depth interviews, observation and documentation. Interviews were conducted with government officials, policy makers, and relevant communities to explore their views on policy implementation. Observations were made to directly observe the implementation of the food reserve program in the field, while documentation was conducted by collecting secondary data in the form of policy documents, program reports and other archives. Data credibility was tested through triangulation techniques by comparing the results of interviews, observations and documentation to ensure consistency and validity of information.

The data analysis technique includes three main stages, namely data reduction, data presentation, and conclusion drawing. Data reduction is done by filtering and selecting data that is relevant to the research focus. Data presentation was done in the form of descriptive narratives to facilitate further analysis. Conclusions were drawn by interpreting the data using the George C. Edward III implementation model framework to identify the supporting and inhibiting factors. Edward III implementation model framework to identify the supporting and inhibiting factors of the policy. Through this method, the research is expected to provide a comprehensive picture of the implementation of the food reserve policy in Sumenep district and provide relevant recommendations to improve the effectiveness of the policy.

D. EXPLANATION

In analyzing policies, it can be seen from several aspects. In order to analyze and interpret data sourced from the results of interviews regarding the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the implementation of food reserves in Sumenep District, it was analyzed using the George C. Edwards policy implementation model. The implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the organization of food reserves in Sumenep Regency can be described as follows:

Communication

In the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the implementation of food reserves in Sumenep District, communication through socialization has been carried out by the Sumenep District Food Security and Agriculture Office. Socialization is a common thing to do, the aim is to provide and foster the same perception as what is conveyed. In the case of socialization of local regulations on food reserves, it is the government's effort to introduce the applicable regulations to the intended parties.

For the government, especially *DKPP* Sumenep, socialization is important to create legal awareness and the same perceptions as those socialized. The head of *DKPP* Sumenep explained that the socialization of the Food Reserve Regional Regulation was carried out in 2020, as stated below:

“Socialization of local regulations in Sumenep district has been carried out since 2020. However, it was not done in 2021 due to Covid-19 and PMK”. (Interview on October 9, 2023)

From this statement, it can be seen that Sumenep district has carried out socialization related to the Food Reserve local regulation in 2020. This shows the Sumenep district government's efforts to increase awareness and compliance with regulations made on food reserves. However, in 2021 socialization is no longer carried out, this is due to covid 19 and foot and mouth disease (FMD). However, the absence of socialization of this food reserve bylaw in 2021 has the potential to affect the level of awareness and compliance with the food reserve bylaw. Without adequate information, there may be a lack of clarity and understanding regarding the actions to be taken.

This situation shows the importance of evaluating socialization activities and planning more carefully to overcome obstacles such as the pandemic in an effort to increase awareness and compliance related to policy regulations on food reserves. The government also needs to find alternative solutions to continue educating the public about the importance of food reserves and related regulations.

On the other hand, the head of the Tamidung Village Farmers Group Association (*Gapoktandes*) said that he did not really understand the food reserve regulation number 05 of 2020.

“There has been no socialization, I also don't really understand the regional regulation on food reserves, but I know that there is a regional regulation governing food reserves in Sumenep District. The issue of the content of the local regulation is that I do not understand the subchapters, let alone the articles and points. However, I know that general things about food reserves are sometimes conveyed in routine activities of the Village Farmers' Group Association (*Gapoktandes*)”. (Interview on October 20, 2023)

This statement confirms that there has been no adequate socialization of the local regulation on food reserves in Sumenep district. The informant admitted that he did not understand the contents of the regulation. However, the community and he have the same understanding of the importance of food reserves. On the other hand, to anticipate the lack of understanding related to the regional regulation on

food reserves, the Village Farmer Group Association provides information related to the regional regulation on food reserves.

This shows the need for further efforts from the government, especially the relevant agencies to provide socialization of the regional regulation on food reserves to the community, so that public understanding increases and its implementation can run effectively. The head of the farmer group also said that:

“Regarding the implementation of the regional regulation, our group has not felt the value of its usefulness. In fact, there are suggestions to the government, the majority of farmers below do not know about the rules related to the agricultural process, especially for the process of maintaining food security. These rules sometimes confuse farmers, so the government needs to reach out to local farmer resources. Make rules that are easily understood and carried out by farmers to facilitate the agricultural process in Indonesia, especially in Sumenep District.”

(Interview on October 20, 2023)

The statement shows that the local regulation on food reserves in Sumenep district has not been clearly valued by farmer groups, who have not felt significant benefits from the regulation. The majority of farmers also do not understand the details of the regulations, especially those related to maintaining food security. This lack of clarity is considered confusing to farmers.

It is further explained that the government needs further intervention to improve farmers' understanding of the regulation. This can be done through more intensive socialization, delivery of easy-to-understand information, and paying attention to the needs of the community and the context of local farmers in designing and implementing relevant regulations. Thus the implementation of the regulation can provide more tangible benefits for farmer groups and improve food security in Sumenep district.

Resources

Human resources in the implementation of local regulation number 5 of 2020 concerning food reserves in Sumenep District are from the Sumenep District Food Security and Agriculture Office. While from the goods and services provider sector, namely Bulog, and from the community as beneficiaries of the regulation, as well as other parties who also support the policy.

The human resources utilized by DKPP are by way of collaboration which is considered the best way to achieve a better result. Collaboration between stakeholders is the key to achieving a plan. As stated by the Head of the Sumenep District Food Security Office, Arif Firmanto, that:

“There is good collaboration between the Sumenep district government and related agencies, such as the Agriculture Office, Health Office, Social Office, as well as farmers, traders”. (Interview on October 9, 2023)

Good collaboration between the Sumenep district government and related agencies, such as the agriculture office, health office and social office, is a crucial factor. This shows that there is good synergy between various parties in efforts to improve food security and the implementation of the food reserve regulation, because each agency has a special role that complements each other.

This collaboration enables the optimization of existing resources. For example, the agriculture office provides information on food production and distribution and storage, the health office can provide knowledge on the health aspects of food, and the social office can assist in distribution to people in need. By involving relevant agencies, the implementation of food reserve regulations can be carried out in a more holistic manner.

The implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* on the organization of food reserves in Sumenep district also has financial resources. The budget to finance the program is the Regional Budget (APBD) and other non-binding budget sources. However, when this regulation will be implemented, the obstacle that occurs is that the budget for this program is reallocated to overcome the covid 19 pandemic. As stated by the Head of *DKPP* Sumenep Arif Firmanto that:

“In the context of Sumenep District, the Covid condition has an impact on the implementation of PERDA No 5 of 2020 concerning food security, which cannot be implemented optimally due to limited resources and the priority that must be given to tackling the impact of the pandemic. The pandemic has resulted in the government having to allocate budget to control the spread of the Covid-19 virus, which in turn affects various government activities”. (Interview on October 9, 2023)

“The same thing was also conveyed by the Secretary of DKPP Sumenep that: “The impact of the COVID-19 pandemic on the implementation of Local Regulation (PERDA) No 5 of 2020 on food security in Sumenep District is not only limited to budget constraints. In addition, social restrictions, lockdowns and health protocols imposed to break the chain of virus spread have also hampered food production and distribution activities. Farmers and food producers face difficulties in marketing their agricultural products due to disrupted access to markets”. (Interview on October 9, 2023)

The statements above illustrate that the Covid-19 pandemic has caused disruptions to the implementation of the Sumenep district food security regulation. This shows how global emergencies can have a direct impact on local policies and practices including food provision. This has led the Sumenep district government to take steps to reallocate the budget originally allocated for the implementation of the food security regulation to be used for more urgent needs during the Covid-19 pandemic.

The Covid pandemic has disrupted food production and distribution activities. This has been caused by restrictions on movement, reduced labor or disruptions in the supply chain, all of which affect the ability to produce and distribute food effectively. However, for 2024, post-presidential change, collaboration efforts are further enhanced as they no longer rely on socialization as in the beginning. Concrete actions that result in efforts to export rice after domestic needs are also met.

Disposition

The good commitment of the Sumenep District Government, especially DKPP, in implementing the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the Implementation of Food Reserves is evidenced by the socialization carried out after the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the Implementation of Food Reserves in Sumenep District was enacted, at which time *DKPP* also conducted the necessary socialization and planning. As stated by the Head of *DKPP* Sumenep that the socialization of the Food Reserve Regional Regulation has been carried out in 2020 since the regulation was passed, but in the following year it was not carried out due to the Covid-19 pandemic as stated below:

‘Socialisation of local regulations in Sumenep district has been carried out since 2020. However, in 2021 it was not done because of Covid-19 and PMK’. (Interview on 9 October 2023)

From this statement, it can be seen that the disposition and seriousness in carrying out and implementing the local regulation on food reserves in Sumenep district have been carried out, as evidenced by the implementation of socialisation related to the local regulation on food reserves in 2020. This shows the Sumenep district government's efforts to increase awareness and compliance with regulations made on food reserves. Unfortunately, in the following year, 2021, socialisation was no longer carried out, due to covid 19 and foot and mouth disease (FMD).

Bureaucratic structure

The bureaucratic structure of the government in the implementation of the Sumenep District food security regulation consists of the Sumenep District Food Security and Agriculture Office and several related agencies whose organisational structure follows the structure of the organisation/agency. In addition, to support the implementation of food reserve regulations, SOPs (Standard Operating Procedures) have been prepared to guide implementers in carrying out their respective duties and functions, so that implementation will be in accordance with existing mechanisms and rules.

In terms of the structure of the government bureaucracy in implementing the *Peraturan Daerah Nomor 05 Tahun 2020* concerning the implementation of food reserves in Sumenep District, it has been fully fulfilled, including the preparation of SOPs and work mechanisms. As stated by the Head of *DKPP* Sumenep Arif Firmanto that:

‘The budgeting for this food reserve local regulation programme has been done, including the SOP for its implementation has been made, it is just a matter of implementing it, despite the fact that we are constrained by the pandemic’. (Interview on 9 October 2023)

From this statement, it is clear that the government's bureaucratic structure has fully supported and tried to maximise this food reserve local regulation, including by drafting a Standard Operating Procedure, which will become the legal basis and mechanism for implementing the programme, despite the fact that the implementation of this local regulation programme is not running optimally due to external factors, namely the Covid-19 pandemic.

In 2024, the head of *DKPP* Sumenep, Chainur Rasyid, explained that applicable efforts for future food reserves included in the *asta cita* of the new leadership, namely Prabowo (known as Nawacita, under Joko Widodo's leadership) will adjust to central regulations.

Apart from the *Peraturan Daerah Nomor 05 Tahun 2020*, it is believed that the central regulation has a stronger influence, so that for the application stage of food security, progress can be found in 2025, in accordance with the implementation of President Prabowo's *asta cita*, especially rice and corn.

The idea of food security measures is in line with the president's *asta cita* programme, and it is in the realm of 2025. The factors that hinder and support the realisation of the *Peraturan Daerah Nomor 05 Tahun 2020* on food reserves are presented in the table below.

Table: Data on Supporting and Hindering Factors in Implementation Food Reserve Local Regulation in Sumenep District

Supporters	Data	Description	Year
-	Inhibitors		
-	Virus Covid-19	The realisation of food reserves in 2020 was not realised due to the Covid-19 virus. The virus caused budget reconfusion in the Sumenep district, resulting in the failure of the food reserve programme.	2020
-	Foot and Mouth Disease (FMD)	Virus The presence of a second virus, the Foot and Mouth Disease (FMD) virus in animals, which is a follow-up virus after the Covid-19 virus, also resulted in the swelling of the Sumenep district government budget. So, to control the virus, budget reconfusion was also carried out, which resulted in the neglect of the implementation of local regulation No. 5 of 2020, namely food reserves for the Sumenep district.	2020
-	Enforcement of Restrictions on Community Activities (PPKM)	Government policy that also requires the Sumenep district government to enforce Restrictions on Community Activities (PPMK) in all public elements. Farmers also experience complex problems due to the implementation of this policy. Food issues are complicated from production to distribution.	2020
Collaboration with various agencies and community organisations	-	There is good collaboration between the Sumenep district government and related agencies: Department of Agriculture, Department of Health, Department of Social Affairs, as well as; farmers, traders will support the development of local infrastructure	
Strengthening Local Infrastructure	-	Road infrastructure development, irrigation systems, and food storage and distribution facilities need to be improved to facilitate the flow of food production and distribution	2020

Source: *Food Reserve Local Regulation in Sumenep District 2020*

These are the supporting and inhibiting factors for the realisation of the *Peraturan Daerah Nomor 05 Tahun 2020* in Sumenep district. This can be used as an evaluation by the government of the food security service apparatus in Sumenep District as well as an answer to the unrest of the farming community in Tamidung village, Batang-batang.

E. CONCLUSION

This study shows that the implementation of the *Peraturan Daerah Nomor 05 Tahun 2020* on the Implementation of Food Reserves in Sumenep District has not been optimal, despite the strong commitment of the local government and collaborative support among stakeholders. Socialisation of the policy took place in 2020, but was halted due to the Covid-19 pandemic and foot and mouth disease (FMD). The main constraint was budget reallocation which reduced the focus on the programme, despite resource planning. The bureaucratic structure also faced challenges in cross-sector coordination. Supporting factors such as education, training, and local infrastructure have not adequately addressed the negative impact of the pandemic on the implementation of this policy. Recommendations include improving consistent communication, diversifying funding sources, optimising bureaucratic structures, as well as flexible mitigation strategies to ensure more effective policy implementation going forward.

REFERENCES

Akbar, A., Darma, R., Irawan, A., Feryanto, F., & Akzar, R. (2024). COVID-19 pandemic and food security: Strategic agricultural budget allocation in Indonesia. *Journal of Agriculture and Food Research*, 18, 101494.

Belesky, P. (2014). Regional governance, food security and rice reserves in East Asia. *Global Food Security*, 3(3–4), 167–173.

Calhoun-Grosch, S., Ruzicka, J. J., Robinson, K. L., Wang, V. H., Sutton, T., Ainsworth, C., & Hernandez, F. (2024). Simulating productivity changes of epipelagic, mesopelagic, and bathypelagic taxa using a depth-resolved, end-to-end food web model for the oceanic Gulf of Mexico. *Ecological Modelling*, 489, 110623.

Campbell, M. L., Hewitt, C. L., & Le, C. T. (2024). Views on biosecurity and food security as we work toward reconciling an approach that addresses two global problems for a sustainable outcome. *Cell Reports Sustainability*, 1(9). [https://www.cell.com/cell-reports-sustainability/fulltext/S2949-7906\(24\)00350-1](https://www.cell.com/cell-reports-sustainability/fulltext/S2949-7906(24)00350-1)

Enquan, L., Shuwen, X., Yanlong, Y., & Sethi, N. (2024). A stochastic and time-delay evolutionary game of food safety regulation under central government punishment mechanism. *Heliyon*, 10(9). [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)06157-7](https://www.cell.com/heliyon/fulltext/S2405-8440(24)06157-7)

Faridudin, R., Basori, Y. F., & Meigawati, D. (2022). IMPLEMENTATION OF THE ONE REGION ONE OFFTAKER POLICY IN THE DEPARTMENT OF FOOD SECURITY, AGRICULTURE AND FISHERIES OF SUKABUMI CITY. *DiA: Jurnal Administrasi Publik*, 20(02), 170–185.

Gidelew, G. E., Alemu, B. A., & Kassie, K. E. (2024). Assessing the Impact of Cluster Farming on Multidimensional Food Security: Evidence from Rural Households in Northwestern Ethiopia. *Journal of Agriculture and Food Research*, 101620.

Huang, Y., Li, K., Zhang, Y., Wang, G., Ma, Y., Jiao, L., Shu, D., Yang, S., Ma, X., & Zhang, Q. (2025). Fine-tuning gas separation performance of copolymer polyimide by the regulation of local microstructure. *Journal of Membrane Science*, 123689.

Khojasteh, M., Faria, P., & Vale, Z. (2025). Adaptive robust strategy for energy and regulation Service Management in Local Energy Communities. *Applied Energy*, 377, 124648.

Lailatul, O., Haryuni, N., & Lestariningsih, L. (2024). The Dynamics of Laying Hens Business in Sumberjo Village, Kademangan District, Blitar Regency, East Java, Indonesia During the Covid-19 Pandemic. *Journal of Development Research*, 8(2), 182–189.

Moussa, L. G., Mohan, M., Arachchige, P. S. P., Rathnasekara, H., Abdullah, M., Jaffar, A., Montenegro, J. F., Kale, A., Heng, J., & King, S. A. (2024). Impact of water availability on food security in GCC: Systematic literature review-based policy recommendations for a sustainable future. *Environmental Development*, 101122.

Mozaffarian, D., Aspray, K. E., Garfield, K., Kris-Etherton, P., Seligman, H., Velarde, G. P., Williams, K., & Yang, E. (2024). “Food Is Medicine” Strategies for Nutrition Security and Cardiometabolic Health Equity. *Journal of the American College of Cardiology*, 83(8), 843–864. <https://doi.org/10.1016/j.jacc.2023.12.023>

Nguyen, H. M., Ho, H. L., Babel, M. S., Tangdamrongsub, N., Himanshu, S. K., Hamel, P., & Park, E. (2024). Nature-based solutions for improving food security: A systematic global review. *Helijon*, 10(16). [https://www.cell.com/helijon/fulltext/S2405-8440\(24\)12113-5?uuid=uuid%3A33418f7f-5dc1-4825-9dbd-641f8454228c](https://www.cell.com/helijon/fulltext/S2405-8440(24)12113-5?uuid=uuid%3A33418f7f-5dc1-4825-9dbd-641f8454228c)

Pandey, D. K., & Mishra, R. (2024). Towards sustainable agriculture: Harnessing AI for global food security. *Artificial Intelligence in Agriculture*. <https://www.sciencedirect.com/science/article/pii/S2589721724000151>

Pratiwi, M. M., Purnomo, E. P., & Syarifuddin, T. I. (2021). Implementation Of E-Performance As A System For Assessing The Work Achievement Of The State Civil Apparatus In The Regional Personnel Agency Of Lamongan Regency. *DiA: Jurnal Administrasi Publik*, 19(2), 282–293.

Qomariyah, P., & Hamid, E. S. (2023). Community-based waste management: Best practice for waste management in Panggunharjo Village, Sewon District, Bantul Regency. *IOP Conference Series: Earth and Environmental Science*, 1180(1), 012009. <https://iopscience.iop.org/article/10.1088/1755-1315/1180/1/012009/meta>

Rasmussen, P., Shaw, A., Jemberu, W., Knight-Jones, T., Conrady, B., Apenteng,

O., Cheng, Y., Muñoz, V., Rushton, J., & Torgerson, P. (2023). Economic losses due to foot-and-mouth disease (FMD) in Ethiopian cattle. *Theodore and Conrady, Beate and Apenteng, Ofosuhene and Cheng, Yanchao and Muñoz, Violeta and Rushton, Jonathan and Torgerson, Paul, Economic Losses Due to Foot-and-Mouth Disease (Fmd) in Ethiopian Cattle*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4547171

Said, L. B., & Syafey, I. (2021). The scenario of reducing congestion and resolving parking issues in Makassar City, Indonesia. *Case Studies on Transport Policy*, 9(4), 1849–1859.

Samaddar, A., Kacha, D., Kaviraj, A., Freed, S., Panemangalore, A. P., & Saha, S. (2025). Rice-fish coculture: Enhancing resource management and food security. *Aquaculture*, 595, 741476.

Shafiee, M., Keshavarz, P., Lane, G., Pahwa, P., Szafron, M., Jennings, D., & Vatanparast, H. (2022). Food security status of indigenous peoples in Canada according to the 4 pillars of food security: A scoping review. *Advances in Nutrition*, 13(6), 2537–2558.

Shao, Y. T., Wang, Y. P., & Yuan, Y. W. (2021). Food safety and government regulation in rural China. *Journal of agriculture and food research*, 5, 100170.

Sirdar, M. M., Fosgate, G. T., Blignaut, B., Heath, L., Lazarus, D. D., Mampane, R. L., Rikhotso, O. B., Du Plessis, B., & Gummow, B. (2024). A comparison of risk factor investigation and experts' opinion elicitation analysis for identifying foot-and-mouth disease (FMD) high-risk areas within the FMD protection zone of South Africa (2007–2016). *Preventive Veterinary Medicine*, 226, 106192.

Tesafa, F., Mulugeta, M., & Tsehay, S. (2024). Women empowerment, efficiency and food security nexus in rural Ethiopia: A generalized structural equation modeling. *Heliyon*. [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)17304-5](https://www.cell.com/heliyon/fulltext/S2405-8440(24)17304-5)

Wicaksono, A., Prihatin, S. M., & Purbawa, Y. (2023). Analysis of area typology and stakeholders' interaction in the sustainable food agricultural land (SFAL) policy implementation. *IOP Conference Series: Earth and Environmental Science*, 1133(1), 012047. <https://iopscience.iop.org/article/10.1088/1755-1315/1133/1/012047/meta>

Wu, X., Zhao, N., Wang, Y., Ye, Y., Wang, W., Yue, T., Zhang, L., & Liu, Y. (2025). The potential role of abandoned cropland for food security in China. *Resources, Conservation and Recycling*, 212, 108004.

Xu, Y., Liang, Y., & Chen, K. (2025). Recessive transition of farmland use and food security: Evidence from China. *Journal of Rural Studies*, 113, 103484.

Zaplata, M. K., Banze, D. A., Floegel, A., Nhabanga, A., & Burkart, M. (2021). Rapid loss of biomass and viability of air-exposed food reserve tubers from a dynamic wetland system in Mozambique. *Environmental Challenges*, 4, 100179.