

# The Economic of Farmers, System, Management, and Technology Renewable Energy Based

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The agriculture sector has important role in economic development of Indonesia. The village economy in Indonesia is dependent on agriculture sector. The challenges of energy crisis and not acceptable to the farmers for economic growth and contribution in national economy. Therefore, the research objectives the economics of farmers, and the use of agricultural technology renewable energy-based research trends. This research was conducted descriptively based on scopus.com data. Researchers obtained 249 rural digital documents over the last five years, where each indexed paper has an average of 10-15% more citations than its closest competitor. More cited references have a broader analysis of bibliometric and historical trends, a complete author profile, and a better h-index measure for authors who started publishing before 1996. This study concludes that the United States has the most research articles on digital villages, followed by the United Kingdom, Australia, and India. The University of Aberdeen (U.K.) has the most research articles on the digital villages, followed by the University of the West of England (U.K.) and Shanghai University of Finance and Economics (China). Therefore, villages development research growing fast nowadays.

**Key words:** Menturus Jombang Indonesia, COVID19, renewable energy, agricultural technology, village development

## 1. INTRODUCTION

Menturus Village is one of the villages in Kudu sub-district, Jombang city, Indonesia (Surya et al., 2021). The village economy in Menturus Village is an agricultural economy (Ghazouani et al., 2020). The Village Government's economy is supported by the Village Budget, with an income of IDR 2,076 billion, a total expenditure of IDR 2,109 billion, so the budget is minus IDR 33,259 million (Widiyanti et al., 2019). Efficiency, loans, financing and additional income are solutions to cover the minus budget (Nugraha et al., 2019; Saudi et al., 2019). Increase in income, not only from village funds, village fund allocations, taxes and levies, which totaled Rp 1.23 billion. The economic potential of the village is sourced from a population of 2446 predominantly Muslim, there are 2 kindergartens, 1 elementary school, 5 village health facilities, 7 mosques, 815 houses with PLN facilities, 2 cooperatives, easy access to elementary, middle, and high school education facilities, universities, villages safe from tsunami (Maulidia et al., 2019; Tambunan et al., 2020; Tuna et al., 2019; Wang et al., 2022), but no early warning system for natural disasters, maintenance available for normalization of rivers, canals, embankments, ditches, drainages, reservoirs, with 62 ha of residential settlements, 147 ha of rice fields, 52 ha of dry fields, 97 ha of technical irrigation, 50 ha of non-technical irrigation, 100 ha of planting area, 94 ha of harvested area, 8 food and beverage industries, 30 grocery stores, 35

restaurants, 1 cell tower, strong signal condition, asphalt road surface. The research objective is to analyze the economics of farmers, and the use of agricultural technology renewable energy-based research trends

No doubt, the formers in the modern agriculture sector demands renewable energy (Rahman et al., 2020; Sasana et al., 2018; Zafar et al., 2019), because they believe that renewable energy is only source that could provide sustainability to the farmers related to their works (Aydoğan et al., 2020; Bashir et al., 2019; Tong et al., 2020). Indeed, the role of farmers is necessary in the agriculture sector because they are contributing a lot in the national food and foreign exports (Armeanu et al., 2021; Fathoni et al., 2021; Salman et al., 2019; Sharvini et al., 2018). The countries that are focusing on the development of farmers and facilitating them for sustainable growth, the farmers of these countries are producing and contributing in the economic growth on the sustainable level (Akhmad et al., 2019; Azhgaliyeva et al., 2020; Carfora et al., 2019; Halimanjaya, 2019; Nathaniel et al., 2020). On the other hand, the farmers that are less reluctant and they have little facility by the government in the energy consumption, the agriculture growth of these farmers is declined (Syahputra et al., 2021). Many scholars have concluded that sustainable production of agriculture is possible with sustainable development of farmers and their basic needs.

A lot of research has been done on the agriculture growth in every country because agriculture sector has significant

contribution in the economic growth of different countries. However, these researchers have not discussed the important role of renewable energy and the use of modern technology for the farmers for agricultural growth. Indeed, this study has identified this gap in literature. The study is based on the descriptive statics that are critically important for enhancement of understanding of further scholars to the literature that is already published for sustainable economic growth of the country. This research has widely discussed all aspect of renewable energy in the literature to contribute in the theory. In this regard, this study has important theoretical implications because the literature in this research is evaluated and explained in the descriptive way for proper understanding. Moreover, based on this research the academics can develop better understanding about the further gaps in literature related to the technology and renewable energy for the farmers to contribute in the body of knowledge.

## 2. LITERATURE REVIEW

Based on years 2018-2020 research papers, include:

1) [Katircioglu et al. \(2014\)](#). Estimating tourism-induced energy consumption and CO<sub>2</sub> emissions: The case of Cyprus. *Renewable and Sustainable Energy Reviews*, 29, 634-640.

In this study, the authors have demonstrated the importance of sustainable tourism that is critical for the economic growth of any country ([Katircioglu et al., 2014](#)). The emphasis on the pandemic is presented because it was a reason that restricted the tourists all around the world to visit east java. No doubt, tourism has importance but this study has highlighted that the traditional ways of tourism are failed during the covid-19 because it was a challenge for the survival of the humanity. Furthermore, this study demonstrated the importance of sustainable tourism with sustainable development goals that are appropriate to promote tourism in any country. This study has concluded that there must be sustainability in the tourism and the welfare of public should be supported by the reliable tourist activities that are necessary to promote tourism sector in any country. The implications of this research has remarkable contribution in the body of knowledge and literature.

2) [Kelly et al. \(2007\)](#). Modelling tourism destination energy consumption and greenhouse gas emissions: Whistler, British Columbia, Canada. *Journal of Sustainable Tourism*, 15(1), 67-90.

Similarly, this research is also based on the concept of tourism that is widely discussed in the modern and contemporary world due to globalization and logistic system. This study has focused on the role of digital tourism that is advanced form of traditional tourism ([Kelly et al., 2007](#)). Indeed, digital tourism has facilities for the public that had no access to different tourist's destinations earlier to it. In this regard, the role of digital tourism must be considered in the effective way for appropriate development of tourism sector. The digital tourism is

refined form of traditional tourism that is facilitating the whole sector in the innovative way. The technology is key factor in digital tourism according to this research because it is facilitating the people to have connection with each other and develop better opportunities in the economic development. Moreover, this research has elaborated that the digital tourism is advanced way of tourism promotion and sustainable economic development.

3) [Zaman et al. \(2016\)](#). Tourism development, energy consumption and Environmental Kuznets Curve: Trivariate analysis in the panel of developed and developing countries. *Tourism Management*, 54, 275-283.

Moreover, this research has emphasized the important role of supply chain for tourism promotion because supply chain is appropriate tool that is directly contributing in the economic growth ([Zaman et al., 2016](#)). The tourism promotion in Indonesia can be increased if the proper supply chain management system is applied to facilitate the people. In the light of this study, the easiness in the selection of supply chain depends on the disclosed cost and the confidence about the supply chain delivery. The modern tourists also focus on supply chain for selecting the destination to visit because they consider that supply chain is important factor for logistic management. Moreover, it has strong influence on the economic growth of different countries as the farmers are beneficiary of the modern supply chains in these countries. Indeed, the government should focus on the role of supply chain and work in the innovative way for improve the operations of supply chains for promotion of tourism in Indonesia. Furthermore, this study disclosed that the sustainability in the tourism sector is guarantee for appropriate development of public benefit that would contribute in the economic growth of the country. In this regard, this study has remarkable discussion necessary for sustainability in the tourism sector.

4) [Pata et al. \(2022\)](#). Exploring the impact of tourism and energy consumption on the load capacity factor in Turkey: a novel dynamic ARDL approach. *Environmental Science and Pollution Research*, 29(9), 13491-13503.

Additionally, this study has revealed the crucial function that the supplier plays in promoting tourist industry as it is an effective strategy that directly contributes to economic expansion ([Pata et al., 2022](#)). If the right logistic chain control system is used to help the populace, the development of tourism in Indonesia can be increased. According to this research, the ease of choosing a supply chain varies depending on the price that is given and the assurance that the supply chain would deliver. Sophisticated travelers evaluate the supply chain when deciding where to go since they believe it to be a crucial component of logistical management. Furthermore, because agriculture in these nations benefit from sophisticated distribution network, it has a significant impact on the financial health of many nations. In fact, the administration needs to pay attention to the importance of distribution networks and work creatively to enhance their

performance in order to promote travel in Java. The research also found that the hospitality industry's permanence is a guarantee for the proper implementation of public benefits, which would aid in the economy of the nation. This report contains a noteworthy discussion that is essential for the tourism industry's future.

5) Liu et al. (2019). The dynamic relationship between CO2 emission, international tourism and energy consumption in Pakistan: a cointegration approach. *Tourism Review*.

This study has demonstrated the research on marine and tourism by determining its impact on Indonesia. This study has concluded that the research on the maritime affairs and the role of marine economy is important in the promotion of tourism (Liu et al., 2019). On the other hand, this study has demonstrated that the countries that have access to marine, these countries can grow the tourism sector in the appropriate way for sustainable development of tourism sector. In the earlier research, it is also concluded that the economy of Indonesia is supported by the tourism sector related to marine tourism.

6) Rauf et al. (2021). Do tourism development, energy consumption and transportation demolish sustainable environments? evidence from Chinese Provinces. *Sustainability*, 13(22), 12361.

This research has significantly discussed the important role of food services in the tourism promotion because food service is considered as appropriate for development of effective supply chain (Rauf et al., 2021). Indeed, the earlier research has neglected the role of food in tourism according to this study, but the importance of food sector in tourism is necessary. The tourists have personal willingness to select the food chain for any purpose or their attraction to the culture. Therefore, the much focus on the food chain can facilitate the tourism sector in Indonesia. This study further demonstrated that the appropriate development of food chain is responsible for effective working that would be beneficial for proper supply chain working. Indeed, the role of food is important by this study in tourism as it motivates different tourists to visit the country and enjoy the food. The responsibility of the government is to work on the food sector development and ensure that the tourists are rightly facilitated with the food. This study has remarkable theoretical implications that are necessary to promote the importance of tourism and benefit the farmers with new resources to produce the agricultural land for the tourism and support the economy.

7) Sghaier et al. (2019). Tourism development, energy consumption and environmental quality in Tunisia, Egypt and Morocco: A trivariate analysis. *GeoJournal*, 84(3), 593-609.

In this research, the authors focus on the role of small and medium enterprises for the sustainable development of economy for the modern countries (Sghaier et al., 2019). The responsibility of the business management is to ensure that the public is facilitated in the right way, and the purpose

of business should be in the economic and regional development according to this study. Furthermore, this research enhanced the importance of sustainable development of economy with the help of small businesses. No doubt, the farmers in any country are contributing into the economic growth with the help of agricultural land that is necessary for the countries benefit.

Researchers get information that the economics of farmers, and the use of agricultural technology renewable energy-based research is multiplying nowadays from the above reference. The economics of farmers, and the use of agricultural technology renewable energy-based research supports supply chain management, logistics, supplier selection, supply chain planning, sustainability, small and medium enterprises, and Central Business District (CBD). The economics of farmers, and the use of agricultural technology renewable energy-based research has shown significant improvement in the last five years.

### 3. METHODS AND DATA COLLECTION

Villages development aims to encourage rural development through technology-based or digital platforms. This research was conducted descriptively based on scopus.com data, which includes more than 1.7 billion references. Researchers obtained 249 rural digital documents over the last five years, where each indexed paper has an average of 10-15% more citations than its closest competitor. More cited references have a broader analysis of bibliometric and historical trends, a complete author profile, and a better h-index measure for authors who started publishing before 1996. Scopus is an abstract and citation-neutral database, which is curated by independent subject matter experts. It puts powerful discovery and analytical tools in the hands of researchers, librarians, institutional research managers, and funders. Scopus generates precise citation search results and auto-updated researcher profiles, creating more prosperous relationships between people, published ideas, and institutions. In addition to protecting the integrity of the scientific record, Scopus makes the performance, ranking, and reputation of institutional research better. The collection of literature that Scopus draws on in its search for green, innovative or sustainable construction covers a wide range of topics. Descriptions and testing of construction materials accounted for a quarter of publications in 2018. Indexing terms related to energy efficiency and project planning are less frequent. It shows that the Internet of Things has shown significant improvement in the last four years. (Sudapet et al., 2019). The analysis process uses (1) research country documents, (2) affiliation documents, (3) affiliation documents, and (4) funding sponsor documents.

### 4. RESULTS AND DISCUSSION

First, the researcher obtained the state documents of the research. Most of the papers came from the United States with 48 articles, followed by Britain 31, Australia 27, India 27, China 25, Spain 14, South Africa 13, Canada 10, and Malaysia 10 documents. The United States has the most

research articles on digital villages, followed by the United Kingdom, Australia, and India.



Figure 1. SCOPUS.COM the Landscape

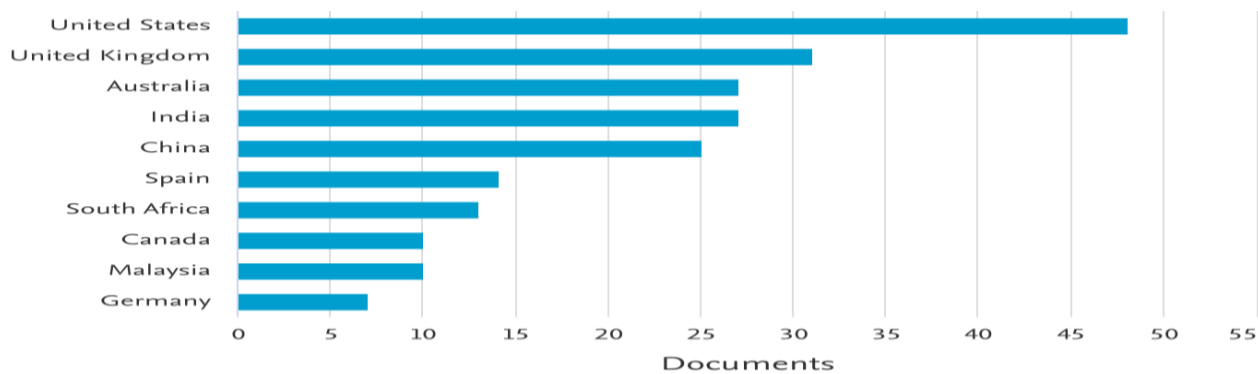


Figure 2. The Documents of the Research Country

Figure 2 above shows the SCOPUS.COM the documents of the research country about Villages Development Research. Second, the researcher obtained affiliation documents. The University of Aberdeen contributed 14 papers. It was followed by the University of the West of England 6 documents, Shanghai University of Finance and Economics 5, Harvard Medical School 4, Deakin University 4, the University of Canberra 4, Universidad de Salamanca 4, and UNSW Sydney 4 documents. The University of Aberdeen (U.K.) has the most research articles on the digital villages, followed by the University of the West of England (U.K.) and Shanghai University of Finance and Economics (China).

Figure 3 above shows the SCOPUS.COM the documents of the affiliation about Villages Development Research. Third, the researcher obtained the document of the field of study. Social Sciences contributed 116 documents, Computer Science 81, Engineering 41, Medicine 37, Business, Management and Accounting 21, Environmental Science 19, Arts and Humanities 18, Economics, Econometrics and Finance 17, and Earth and Planetary

Sciences 16 documents. The field of social studies is the favorite research article on digital villages, followed by computer science and engineering.

Figure 4 above shows the SCOPUS.COM the documents of the subject area about Villages Development Research. Finally, researchers obtained funding sponsor documents—the U.K. Research and Innovation produced 11 documents, Engineering and Physical Sciences Research Council (U.K.) 9, U.S. Department of Health and Human Services 9, European Commission 7, National Institutes of Health 7, National Natural Science Foundation of China 7, Government of Canada 5, Economic and Social Research Council (U.K.) 4, and the Social Sciences and Humanities Research Council of Canada 4 documents. The U.K. Research and Innovation have the most research funding sponsors in the digital village, followed by the Engineering and Physical Sciences Research Council (U.K.) and the U.S. Department of Health and Human Services. Figure 5 above shows the SCOPUS.COM the documents of the funding sponsor about Villages Development Research.

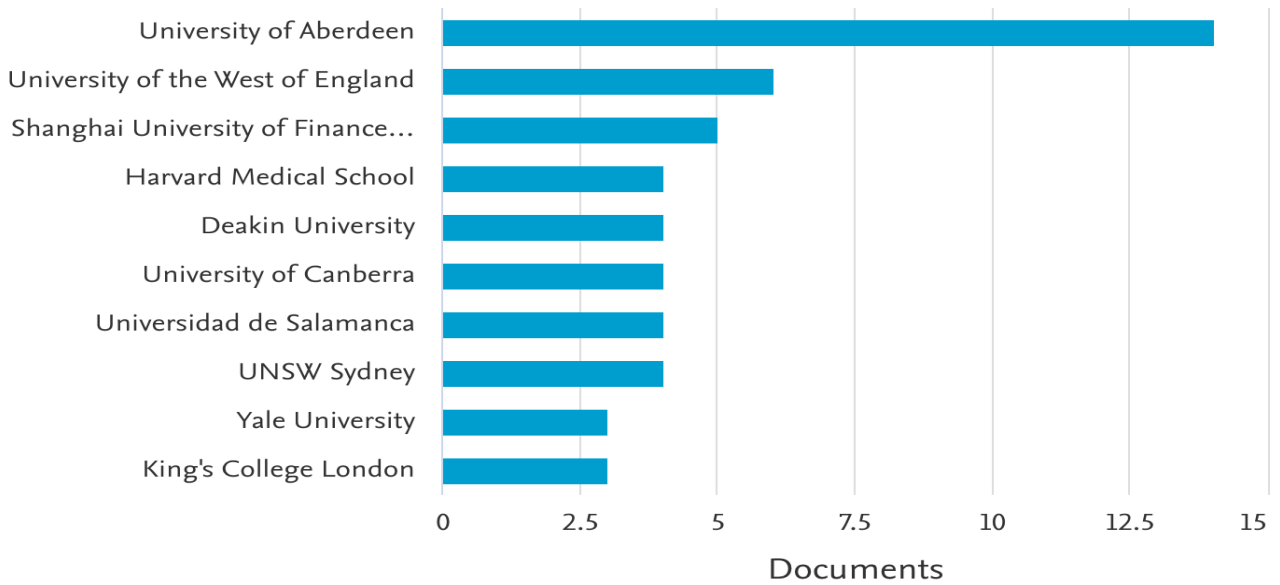


Figure 3. The Documents of the Affiliation

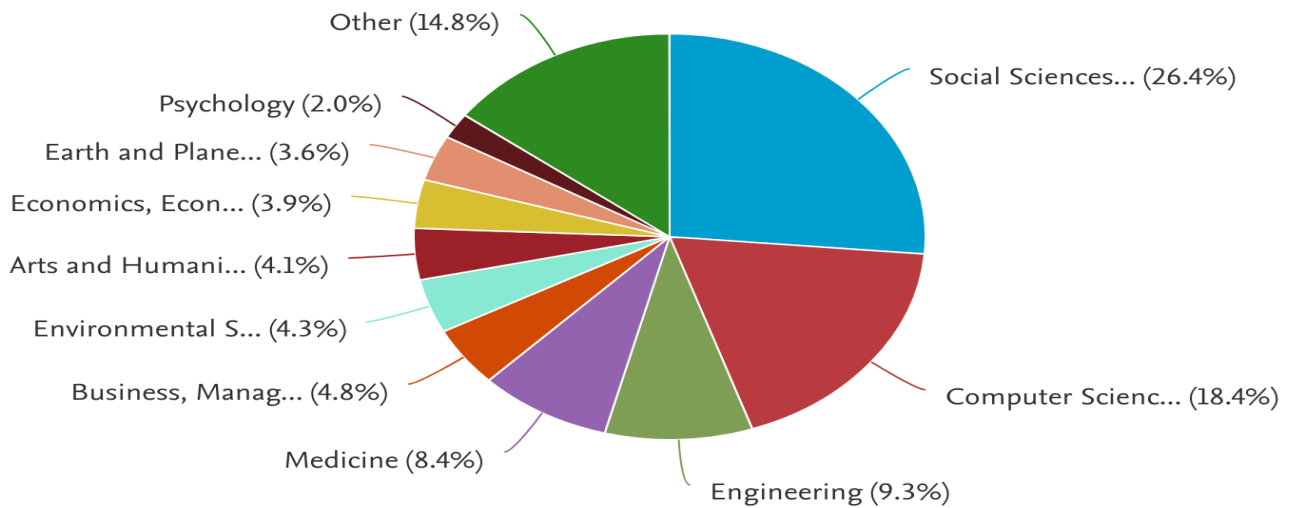


Figure 4. The Documents of The Subject Area

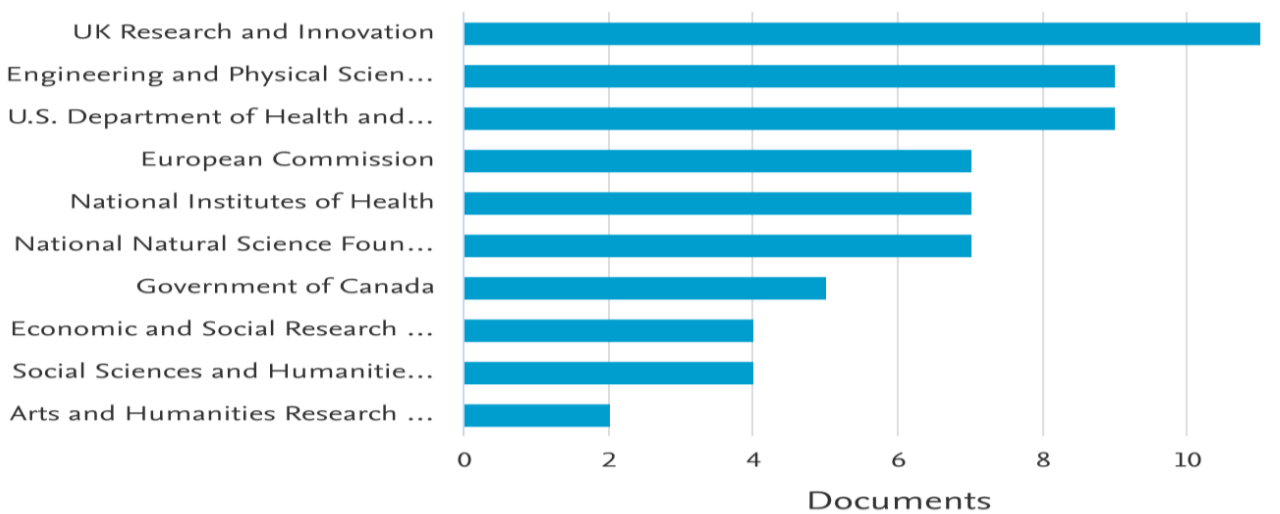


Figure 5. The Documents of the Funding Sponsor



Figure 6. Rice milling SOLAR energy, Agricultural Technology Renewable Energy

Figure 6 above shows the Rice milling SOLAR energy, Agricultural Technology Renewable Energy, support economic of farmers

## 5. CONCLUSION

By and large, villages development aims to encourage rural development through technology-based or digital platforms. This research was conducted descriptively based on SCOPUS.COM data, which obtained 249 documents with the title villages for the last five years. The United States has the most research articles on digital villages, followed by the United Kingdom, Australia, and India. The University of Aberdeen (U.K.) has the most research articles on the digital villages, followed by the University of the West of England (U.K.) and Shanghai University of Finance and Economics (China). The field of social studies is the favorite research article on digital villages, followed by computer science and engineering. The U.K. Research and Innovation have the most research funding sponsors in the digital village, followed by the Engineering and Physical Sciences Research Council (U.K.) and the U.S. Department of Health and Human Services. So, villages development research growing fast nowadays.

## 6. IMPLICATIONS AND FUTURE DIRECTION

This research has significant theoretical implications as it is a descriptive study that collected and evaluated the earlier publications to consider for sustainability in the economic development. Indeed, this research has collected references from the earlier studies and discussed the importance of renewable energy for the farmers. The

literature review of this study is also remarkable as it has enhanced and enlighten the literature in the productive way to emphasize on the sustainability of the community development in Indonesia. In this regard, the research gaps are also highlighted by the evaluated literature of this study to provide more attention for the future research to work on the sustainable development. On the other hand, this study has some remarkable gaps in the literature that are necessary for the improvement in the sustainability of public and farmers for economic growth in Indonesia. This research recommends that the future research may consider the role of agriculture tourism in the economic growth of Indonesia because it is emerging in the modern world. Secondly, this study recommends that the literature on village development is emerging in these days, but the future researchers need to emphasize the role of agriculture tourism and religious tourism in sustainable economic development in Indonesia, particularly the village development.

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