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Do Village Allocation Funds Contribute towards Alleviating Hunger among the Local Community (SDG#2)? An Insight from Indonesia

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Abstract: Using an exclusive data set from Indonesia in 2018–2020, this study aims to prove whether there is a relationship between the allocation of village funds and the level of hunger in the community. In particular, this study tries to find out whether the Village Fund allocation policy has an effect on the achievement of the United Nations Sustainable Development Goal 2 (SDG#2). Using a quantitative method with regression analysis, this study found that the allocation of village funds by the Indonesian government supported hunger and poverty alleviation in all areas of Indonesia's villages. This research result has implications for policymaking on sustainable food inclusion, especially in Indonesian villages.

Keywords: village funds; level of hunger; SDG#2; poverty and hunger pattern; zero hunger

1. Introduction

Hunger has been a worldwide problem for centuries. Those who suffer from chronic hunger do not have the option and ability to buy food. Hence, they do not get enough calories and essential nutrients. When this primary need is not met, people do not have the energy for anything else that is normal in human life, for instance going to school, having a job, and so on. Hunger is an ongoing problem that is closely related to poverty.

Poverty is the powerlessness to gain access to basic resources, whether it is food, clothes, education, or anything else of that nature. As poverty increases, as does hunger. Hunger is the worst consequence of poverty. In turn, poverty increases when people are silent and indifferent toward social injustice. In rural areas, injustice may include a lack of access to energy as well as an inability or difficulty in using modern information and communication technology (Acharya and Chakraborty 2018; van Gevelt et al. 2018; Zavrtnik et al. 2018; Samarakoon 2019).

World hunger is still the biggest challenge faced by humanity today. In 2018, around 857 million people in the world were still suffering from chronic hunger. Many kinds of research have been conducted to find solutions. Some believe that sustainability is considered a key driver for food innovation and that it can solve the problem. Transgenic food and gen-engineering technologies (Garcia et al. 2019; Ahmad et al. 2021), for instance, have been offered as one of the solutions, but such ideas are still controversial and debatable. Many approaches, whether one-dimensional or covering multi-dimensional aspects, have been conducted to test and see how the problem can be solved. Yet, up to the present time, hunger remains a persistent problem. Why is that? It seems that the complexity of the cause

of hunger has to be taken into account. Several factors that cause hunger are (i) extreme poverty, (ii) climate change, (iii) conflict between countries, (iv) gender inequality, (v) global food systems that are not conducive to the purpose, and (vi) COVID-19 (Acharya and Chakraborty 2018; Ahern 2021). Chansanam and Li stated that future research on poverty should place more emphasis on the poverty line, social policies, and living standards (Chansanam and Li 2022).

The enormous health impacts of COVID-19 have caused misery and increased health-care costs worldwide. A developing country such as Nigeria stands out from the rest. Eighty-four other developing countries also have suffered from the economic downturn, and in the long run, the progress made towards the “zero hunger” goal is at risk of being completely reversed in those countries. The pandemic has triggered living costs to rise significantly while the living standard falls, plunging hundreds of millions of people back into poverty (Ahern 2021; Klingelhofer et al. 2022; The World Bank 2021; Lakner et al. 2020; Saccone 2021). Saengtattim et al. (2022) also investigated the impact of COVID-19, and came to the conclusion that there is a connection between the health, economic, and tourism aspects caused by the COVID-19 pandemic. Some countries in the South Asia region, for example, are home to some of the largest undernourished communities in the world (Von Grebmer et al. 2020). Meanwhile, Nakao (2019) stated that 822 million people on earth are in food insecure conditions, and as many as 517 million people (62.89% of them) are in the Asia Pacific region.

Indonesia is also facing challenges posed by hunger. Based on the GHI report (2020), especially in Southeast Asian countries, Indonesia ranks 70th out of 107 countries facing difficulties in meeting their psychological needs for food and nutrition with an index score of 19.1. This means that there are still many hungry people in Indonesia. The global hunger index of 18.2 is referred to as being at a moderate level. Therefore, Indonesia cannot yet be considered to have attained a moderate level (Von Grebmer et al. 2020). In the case of Indonesia, the occurrence of the COVID-19 pandemic resulted in an increase in hunger by 0.73%, from 9.22% in 2019 to 9.95% in the third quarter of 2020 (Kompas Newspaper 2020). This increase in the level of hunger has slowed the growth of the Human Development Index to 71.94 in 2020 which is up only 0.02 points from 2019; whereas usually, the increase amounts to around 0.5–0.6 points per year (BPS 2020). Based on Law No. 6 of 2014, the Indonesian Government began to allocate Village Funds in 2015 to eradicate poverty, especially in rural areas.

Many kinds of research have been conducted on hunger and poverty over the last two decades, and poverty studies increase by 10.18% each year. However, different from other studies, this research focuses on how village funds in Indonesia contribute to alleviating hunger and poverty. At the same time, this study seeks to find whether village funds as direct assistance by the Government can be an effective way to reduce poverty in order to achieve zero hunger by 2030.

1.1. Fighting (Combating) Hunger around the World

Governments in various countries have been making significant and various efforts to overcome the hunger problem faced by their populations. Thailand, for example, is pursuing a model for the New Rice Farming System through irrigation water (Watanabe 2017). Meanwhile, Bangladesh has provided cash assistance since 2016 (Regmi and Paudel 2016). India seeks to be hunger-free with its policy of modernization of food procurement (Tanksale and Jha 2015). Meanwhile, in Brazil, national policies, private sector participation, and financial policies have been implemented. (Paes-Suso and Vaitsman 2014).

The following Table 1 describes the strategy of a group of countries around the world designed to overcome hunger and poverty and to achieve “zero hunger”.

Table 1. Strategy to Overcome Hunger and Poverty.

#	Cluster	Countries	Strategies Description
1	Africa	Cameroon Eswatini Ghana Guinea-Bissau Lesotho Liberia Mozambique Namibia Nigeria Rwanda Tanzania The Gambia Uganda Zambia Zimbabwe	<p>The NFSP is a food security program (2009) as an adaptation of the Rural Sector Development Strategy (SDSR) in Cameroon, has two objectives: (1) to develop agricultural production and supply in a sustainable manner and (2) to manage the risks of food insecurity. The National Food and Nutrition Policy (NFNP) of 2005 provides a guide for planning nutrition-sensitive interventions in Eswatini. It aims to inform and influence development through enabling legislation, especially regarding food fortification and supplementation, and to promote the mainstreaming of food and nutrition services and concepts into development programs in various sectors. The agriculture, health and nutrition, and social protection sectors are key in the drive towards zero hunger in Ghana. Food and nutrition security is multi-disciplinary, and all sectors have a role to play. These efforts are in line with the Terra Ranka (Fresh Start) Strategic Operational Plan, which indicates food security as one of the priorities to support investment in human capital. Other countries in Africa, namely Guinea Bissau, Lesotho, Liberia, Mozambique, Namibia, Nigeria, Rwanda, Tanzania, Gambia, Uganda, Zambia, and Zimbabwe, also have similar comprehensive strategies and policies in agriculture and food security, social assistance and social protection, food safety and standards, and nutrition security in their own country.</p>
2	Asia–Pacific	Afghanistan Bangladesh Cambodia Indonesia Lao PDR Myanmar Nepal Philippines Sri Lanka Timor Leste	<p>Several policies and frameworks supporting SDG#2 are the Afghanistan National Peace and Development Framework (ANPDF) for 2017–2021, Afghanistan National Health Policy 2015–2020, Afghanistan Essential (EPHS) and Basic Packages of Health Services (BPHS), and Afghanistan Food Security and Nutrition Agenda (AFSeN). Bangladesh policies are:</p> <ul style="list-style-type: none"> (i) diversified, resilient, and nutrition-sensitive agriculture, (ii) inclusive, efficient, and nutrition-sensitive social protection system and Public Food Distribution System (PFDS), (iii) programs for poor and vulnerable women, a safety net for children, a school feeding (SF) program, and (iv) nutrition-specific interventions. Cambodians have also substantially improved physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences, and to optimize the utilization of this food in order to keep a healthy and productive life. Indonesia has policies, strategies, and programs in Indonesia in the field of food and nutrition security in the National Long-Term Development Plan/Rencana Pembangunan Jangka Panjang Nasional (RPJPN) 2005–2025. Myanmar, the Philippines, Nepal, Sri Lanka, and Timor Leste have a multi-sectoral approach to eliminate hunger and malnutrition, improve food security-sustainability, income generation, health, gender inequality, and all other aspects to achieve zero hunger.
3	Latin America and Caribbean	Colombia	<p>In Colombia, Food Security and Nutrition (FSN) has ceased to be a marginal and sectoral issue and has become a state issue. The government must also ensure that the entities executing government actions review their current schemes and adjust to the broader and more overarching vision to improve their efficiency on FSN and development. The advisory of the World Food Program (WFP) is crucial to the Colombian government.</p>

Table 1. Cont.

#	Cluster	Countries	Strategies Description
4	Middle East and Europe	Armenia Iraq Jordan Kyrgyzstan Lebanon State of Palestine Tajikistan Tunisia	National policy framework for food security in Armenia are included in the “Law on Survival Minimum Expenditure Basket and Minimum Survival Budget”, the “Law on State Benefits”, the “Law on Social Assistance”, and the “Family Living Standards Enhancement Benefits” program. The Iraq government development efforts relevant to SDG#2 food nutritional security are National Nutritional Strategy 2012–2021, National Poverty Reduction Strategy 2018–2022, Social Protection Law (Law 11 of 2014), Agriculture and Food Security Policies, and National Poverty Reduction Strategy 2018–2022. Jordan 2025 represents a long-term national vision and strategy rather than a detailed government action plan. It includes more than 400 policies or procedures that should be implemented through a participatory approach between the government, business sector, and civil society. The Kyrgyzstan Republic has a range of targeted policies that reflect the food security as a whole or in its separate components. Lebanon, Syria, and Palestine are also facing a lack of economic access to food that is closely correlated with poverty, as is Tajikistan. Meanwhile, Tunisia has not experienced any situation of food shortage or severe supply difficulties leading to food insecurity in decades. In fact, Tunisia is one of the three African countries to be ranked globally in the “good performance” category in terms of food and nutrition security.

(Source: [Zero Hunger Strategic Review 2022](#)).

1.2. Indonesia’s Strategy to Overcome Hunger and Poverty

The severe hunger phenomenon occurred specifically in Eastern Indonesia. The population in the eastern part of Indonesia mostly lives from farming; however, agriculture is still very traditional and so the results are not sufficient for living needs. In addition, natural disasters often reduce agriculture yields. The condition of disrupted agricultural productivity is as stated by the [Papua Food Security Council et al. \(2019\)](#).

The Indonesian government is working hard to tackle hunger throughout its territory. Various programs have been carried out to combat this hunger, such as direct cash assistance or village funds. The Village Funds Program has been rolled out since 2015 to increase the empowerment of rural communities in order to overcome the hunger of villagers ([Simorangkir 2017](#); [Ishartono and Rahardjo 2016](#)). According to [Saragi et al. \(2021\)](#), over a five-year period there has been a drastic increase in the number of village funds that have been disbursed.

2. Methodology

2.1. Research Method

This research uses a quantitative method with a verification approach ([Sekaran and Bougie 2016](#)). This method not only provides an overview of the phenomena that occur in the object of research, namely village funds associated with starvation conditions but also provides an explanation of the configuration of hunger in Indonesia. Based on the results of data processing, the resulting implications will be interpreted and given meaning. The problems studied were also discussed by a group of researcher teams with the Financial Ministry of Indonesia. This is in line with the purpose of this research, which is to examine what the patterns of poverty and hunger data consist of at the national level in Indonesia. In addition, this study aims to establish whether there is a relationship between the implementation of Village Fund assistance and the achievement of SDG#2.

2.2. Research Stages

The steps followed in this study can be described as follows: Stage (1) conducts literature research on hunger and poverty to find the gaps in existing research; Stage (2) collects data from various sources that are linked to the 2018–2020 Village Fund allocation in achieving SDG#2 in Indonesia’s rural areas; Stage (3) processes the data using the statistical (regression) method to find the pattern of whether it can achieve “zero hunger”; Stage (4) performs a thorough analysis and data processing with a quantitative descriptive approach and verification, the results of which will be used as the basis for making conclusions and developing some recommendations. These research stages are shown in Figure 1.

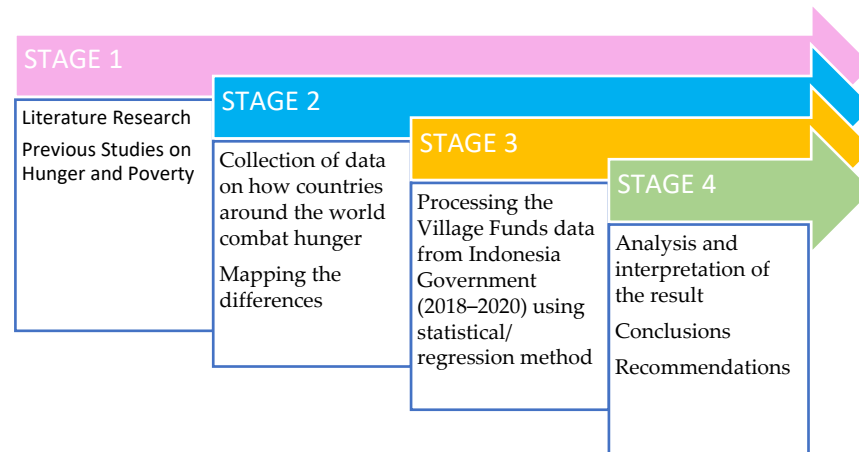


Figure 1. Research Stages.

2.3. Population and Research Sample

The population of this study comprises all data on village funds in Indonesia, which consists of 80,000 villages. Using the poverty and hunger index diagram by province (BPS 2020), it was found that Papua is the province with the highest hunger rate. Kalpika Sunu’s research in 2019 also shows that village funds have a positive effect on poverty, hunger, and community welfare (Sunu et al. 2019).

2.4. Data Collection Techniques

The data required for this study are those on the state of poverty and hunger in Indonesia for the period 2000–2020 from the Central Bureau of Statistics (BPS 2021), village funds data from the Information System of the Indonesian Ministry of Finance’s Fiscal Policy Agency, data and information on SDG#2, National Socio-Economic Survey data (SUSENAS), data from the National Development Planning Agency (BAPENAS), Asian Development Bank (ADB) data, Food and Agriculture Organization (FAO) data, and data from the Global Hunger Index (GHI).

2.5. Data Processing and Analysis Techniques

All data collected are subsequently classified, summarized, processed, and later analyzed and interpreted. (1) For data on hunger conditions in Indonesia 2000–2020, the processing uses Microsoft Excel software to create charts so that the directions can be analyzed, and their meaning interpreted. (2) Mapping of SDG#2 targets and indicators for village funds in all areas of Indonesia villages. Each activity code is identified in relation to the indicators and targets in SDG#2. Then, the indicators and target code of activities in each province are entered, after which the data are processed to make a summary, calculate the ratio, and make the chart.

3. Results

3.1. Indonesia's Poverty and Hunger Index (PHI)

The Poverty and Hunger Index (PHI) is a composite index that is a multidimensional indicator of poverty and hunger, which has been used to monitor the achievement of the 2015 millennium development goals (MDGs) (Nazamuddin and Jayanti 2019). Meanwhile, the criteria for measuring hunger levels are based on the basic human physiological needs for food and nutrition as carried out by BPS (2020).

By studying the measurement of hunger in Indonesia, this study can find how the Village Funds Program can contribute to fighting hunger. The aim is to find out whether it can be estimated when the Village Funds Program can eliminate and solve the problem. The following Figure 2 is presented the condition of the poor population in Indonesia that is closely related to hunger during 2000–2020 (BPS 2021).

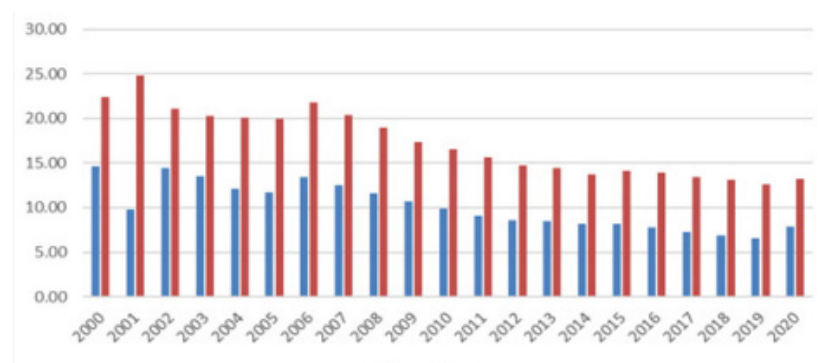


Figure 2. The percentage of Indonesia's poor population in urban (the blue one) and rural areas (the red one) from 2000 to 2020. Source: (BPS 2021).

The percentage of poor people in Indonesia both in urban and rural areas, from 2000 to 2020 decreased continuously. In 2020, it rose again compared to the previous year. This is generally caused by the pandemic that has occurred in Indonesia since December 2019.

3.2. Village Fund

A village is a place of life for traditions, customs, and local wisdom that becomes the culture and personality of the nation. Therefore, the village is one of the bulwarks of the country's resilience (Soekarnoputri 2021). As such, it is also referred to as the spearhead area for the government in serving its people.

The definition of a village fund based on Act 6/2014 states that village funds are funds allocated in the National Revenue and Expenditure Budget, specifically for villages that are transferred through the district/city's Regional Revenue and Expenditure Budget and used to finance government administration, development implementation, community development, and community empowerment (KPPN Bukit Tinggi 2021).

Village Funds were first distributed by the Government in 2015 in the amount of 47 trillion (Simorangkir 2017). The first distribution of village funds is prioritized to finance local-scale programs and activities to develop villages and empower communities. This conforms to the regulation of the Minister of Villages, Development of Underdeveloped Areas, and Transmigration No. 21/2015 on setting priorities for the use of village funds (Ishartono and Rahardjo 2016). Moreover, in 2020, the distribution of village funds had reached 99.95% of IDR 71.1 trillion from the total of IDR 71.139 trillion (Simorangkir 2017). It appears that the amount of village funds disbursed over a six-year period has increased very sharply, as observed in Saragi's study (Saragi et al. 2021), which also found a drastic increase in village funds over a five-year period.

Act 6/2014 has explained that the objectives of Village Funds are as follows: (1) improving public services in the village; (2) alleviating poverty; (3) advancing the village economy; (4) overcoming development gaps between villages; and (5) strengthening rural

communities as subjects of development. Indonesia's Minister of Finance Sri Mulyani's foreword to the book entitled *Smart Village Fund* stated that results of the evaluation of the use of Village Funds (2015–2016) show that the Village Fund has succeeded in improving the quality of life of rural communities, as indicated by a decrease in the rural inequality ratio from 0.34 (2014) to 0.32 (2017), and a decrease in the percentage of rural poor people from 14.09% (2015) to 13.93% (2017) (Ministry of Finance 2017).

3.3. Sustainable Development Goals 2—Zero Hunger

Ratification of SDGs was accomplished on 25–27 September 2015 at the UN headquarters, where the SDGs had 17 goals and 169 indicators. There were 193 UN member countries that unanimously adopted a document entitled *Transforming Our World: The 2030 Agenda for Sustainable Development* (United Nations 2015b).

The goal of the global SDGs is to maintain a balance between the three dimensions of sustainable development (i.e., environmental, social, and economic). The SDGs have five main foundations, specifically (1) People, (2) Planet, (3) Welfare, (4) Peace, and (5) Partnership. Together, these five foundations are used as the basis for achieving noble goals: (1) ending poverty, (2) achieving prosperity, and (3) overcoming climate change (United Nations 2015a). Meanwhile, the goals of Indonesia's SDGs as set by the President of the Republic of Indonesia are *to develop Indonesia from the periphery, that is to say from the countryside* (Iskandar et al. 2020; Soekarnoputri 2021). Furthermore, Iskandar et al. (2020) stated that the elaboration of national SDGs into village SDGs was set with one of the objectives to achieve billages without poverty and hunger (SDG#2).

Zero hunger, as goal number 2, illustrates that the world has agreed to end poverty and hunger in any form, including Indonesia. The achievement of goal 2 is closely related to other global goals because there are partnerships in achieving these 17 goals (United Nations 2015a). With regards to goal 2 as an example, the objectives relate to: a world without poverty, good health and well-being, quality education, gender equality, clean and affordable water, and so on. Consequently, partnerships are very important in achieving these goals (Satriatna 2020).

3.4. Legal Base for SDG Implementation in Indonesia

The legal base is very important in implementing the SDGs in Indonesia due to their usefulness in evaluating the achievement of the SDGs. The legal base that oversees the implementation of Indonesia's SDGs, one of which is the Regulation of the Minister of National Development Planning/Head of the National Development Planning Agency No. 7 of 2018, is concerned with the coordination of planning, monitoring, evaluating, and reporting of the implementation of sustainable development goals. In principle, the implementation of Indonesia's SDGs is always monitored through the SDGs implementation monitoring the report concerning SDGs (Peraturan Menteri Perencanaan Pembangunan Nasional No. 7 Tahun 2018).

4. Discussion

4.1. Configuration of Data of Indonesian Poverty and Hunger for the Period 2000–2019

The results of data collection show that the characteristics of Indonesian farmers are often shaped by their inability to live a decent life, and often the experience of suffering from hunger because they still resort to traditional farming. The wages they receive are generally low, due to their low productivity. In addition, the failure of their agriculture is caused by disasters: floods that resulted in crop failure, drought, and difficulties in accessing remote areas (Nurhadi 2021). Furthermore, as the results of the research by Olawuyi (2019) show, in the Oyo state area of Nigeria, approximately 48.25 percent of smallholder farmers are food insecure. This shows that farmers in rural Indonesia still need a lot of assistance in terms of knowledge and technology to carry out farming work more effectively and with better yields.

This is similar to the reality of the condition of farmers in Papua. The total population of Papua amounted to 3 million people in 2020 (BPS 2020). Demographically, the Papuans have always lived from farming with an undeveloped knowledge of farming, so hunger often occurs. Currently, there is still hunger in the pockets of remote areas, although the numbers are decreasing (Food Security Council of Papua et al. 2019). Bad hunger conditions occurred in Papua in 2018, in which 100 people died due to malnutrition that year alone, occurring in the Asmat Regency and the Bintang Mountains. Famine also hit 156 districts, specifically in the following 9 districts: Jayawijaya, Nabire, Yapen, Waropen, Keerom, Boven Digoel, Biak Numpor, Asmat, and the Bintang Mountains (Food Security Council of Papua et al. 2019).

Based on research in Sorong, West Papua (Kusaly 2020), currently agriculture in Papua is fairly evenly distributed and yields are increasing. According to these sources, the famine that occurred in Tambrau Regency, West Papua, was probably caused by the ineffective management of aid from the Government. The ineffectiveness of aid management was also stated by Mulawarman (2020) and Priyarsono (2021) who argued that there is still a need to increase the effectiveness of government aid management. The delay in aid management is also due to the absence of complete and valid statistics on support for food and agriculture, and that is why they are often mistargeted (Gennari 2020). There are other weaknesses, namely the shift in the function of agricultural land to non-food plantations, such as palm oil (Astuti et al. 2011) which also reduces food yields. Even so, the government is trying to overcome the problem with plans to develop food estates in the regencies of Boven Digoel, Mappi, and Merauke so that agriculture in Papua can be more advanced. (Madani Insight 2021). At the same time, these findings show a lack of knowledge in farming and managing government financial assistance to alleviate poverty and hunger.

As for the development of data on the amount of hunger in Indonesia, observing Indonesia's Susenas data every year, BPS data, Bappenas reports, and ADB reports, the development of the number of Indonesian people who experience hunger can subsequently be arranged hierarchically, as displayed in Table 2.

Table 2 shows that the amount of hunger in Indonesia, both in terms of numbers and in percent of the total population, shows a number that continues to decline during the period 2000–2020. The continuous decline indicates better conditions and is in line with the Government's target to eliminate hunger in Indonesia by 2030 as stated in SDG#2. The data pattern for Indonesia's hunger level for 2000–2020 can be seen in the Figure 3.

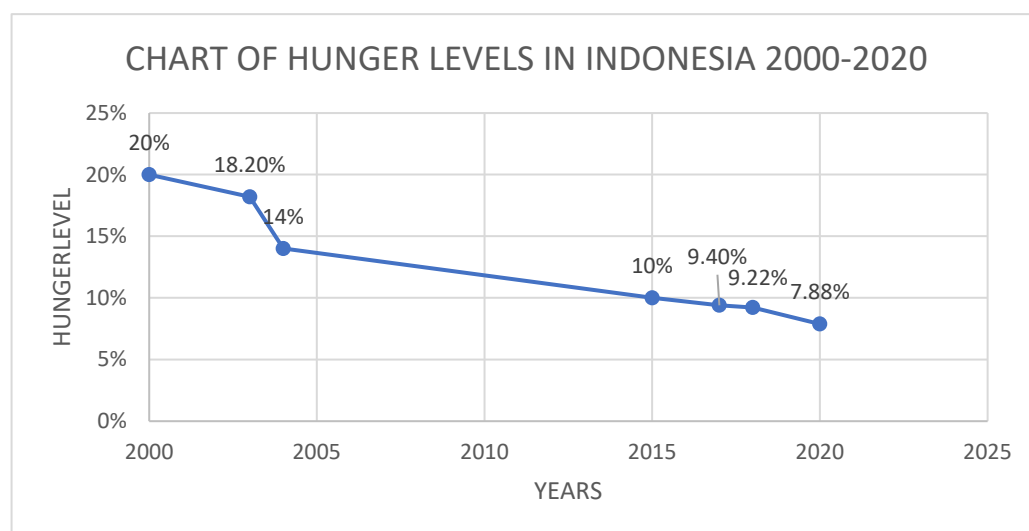


Figure 3. Decreasing patterns of hunger levels in Indonesia 2000–2020. Source: Data processing result.

Table 2. Hierarchy of development of total amount hunger among the Indonesian population 2000–2020.

Period	Description
Period of 2000	ADB says the number of hungry people in Indonesia was 42 million people or 20% of the total population in Indonesia in the year 2000
Period between 2000–2005	Ministry of National Development Planning/Bappenas (through Propenas 2000–2004) mentions four policies to overcome hunger: (1) the expansion of opportunities; (2) community empowerment; (3) human resource capacity building; and (4) social protection. This policy resulted in 18.2% of the population being poor and starving in 2002, and 14.0% in 2004.
Period up to 2015	Still according to Bappenas, the Government of Indonesia's long-term 25-year target for the 1999–2015 period is to be able to reduce the amount of hungry people by 50% with the following indicators: (1) prevalence of toddlers aged under five with malnutrition, and (2) the proportion of the population below the minimum consumption level of 2100 kcal/capita/day. *
Period between 2016–2018	ADB said that in 2016–2018 there had been a reduction in the amount of people in the hunger category in Indonesia to 22 million people. Compared to 2000, there has been a decrease of 47.6%. This reduction rate is exactly what was targeted in MDG1, which was a target of a 50% reduction in the number of hungry people by 2015. **
In the year 2019–2020	Indonesian BPS data shows the number of 24.79 million poor and hungry people in Indonesia as of 2019, or 9.22% of the total population. This condition illustrates that the MDG1 target has been exceeded, with a decline of 54%.
Target for 2030	According to the SDGs goal 2, it is stated that by 2030 it is expected that the amount of people suffering from hunger in Indonesia can be eliminated. ***

Source: * Ministry of National Development Planning/Bappenas (2016, 2018), Priority use of Village Funds is for the infrastructure sector 2016. Available at: <http://www.bappenas.go.id/beritadansiaranpers/sektor-infrastruktur-prioritas-penggunaan-dana-desa-2016> (Accessed: 17 June 2021). ** Asian Development Bank (ADB 2020) Report: 22 million Indonesians Suffer from Hunger, available at: <http://www.news.detik.com/dw/d-4776060/lap-adb-22-juta-orang-Indonesia-menderita-kelaparan> (Accessed 27 September 2020). *** United Nations (2015a). Department of Economic and Social Affairs—Sustainable Development. Available at: <http://www.sdgs.un.org/goals> (Accessed 13 June 2021).

Figure 3 shows a decreasing pattern of hunger levels in the 2000–2019 period, while the 2020–2030 period is the target line for the target (2030) which is point 0. The decreasing hunger level means that the amount of hunger in Indonesia is decreasing, and Indonesia's condition is improving. Assuming that hunger rates in Indonesia keep decreasing, the impact of COVID-19 can be overcome, that the Village Funds Program is still running, and the definition of hunger remains based on the human physiological needs for food and nutrition, it is possible that Indonesia will approach zero hunger in 2032.

4.2. Discussion on the 2018–2020 Village Fund Allocation over the Achievement of SDG#2

Below the results of matching 250 village fund activity codes in each village are presented, which are contained in the village fund allocation data with all targets and indicators of goal 2. This matching is carried out consistently over four provinces, so as to produce interpretations that do not vary. The following is the relationship between village fund activity codes and all SDG#2 targets and indicators, as shown in Table 3.

Table 3. Relationship between village fund activity codes and indicator codes and target SDG#2.

Village Fund Activity Codes	Village Fund Activity Description	SDG#2 Targets	SDG#2 Indicators	SDG#2 Indicator Descriptions
1305	Participatory Mapping and Analysis of Village Poverty		2.1.1	Indicator 2.1.1—prevalence of undernourishment
1408	Development Village Information System		2.1.1	Indicator 2.1.1—prevalence of undernourishment
1409	Coordination/Cooperation of Government Administration and Village Development (Between Villages/Districts/Districts, Third Parties, etc.)	2.A		target 2A—expansion of agriculture, productive capacity and plant and animal gene banks in developing countries
1412	Facilitating the Distribution of Prosperous Rice (Rastra)		2.1.1	Indicator 2.1.1—prevalence of undernourishment
2201	Implementation of Village Health Posts (PKD)/Village-Owned Polindes (Medicines; Additional Incentives for Village Midwives/Village Nurses; Provision of Family Planning Services and Contraceptives for Poor Families, etc.)		2.1.2	Indicator 2.1.2—prevalence of population with moderate or severe food insecurity, based on experience on the scale of food insecurity
2202	Posyandu Implementation (Supplementary Meals, Pregnant Women Class, Elderly Class, Posyandu Cadre Incentives)	2.2		Target 2.2. 2030, eliminating all forms of malnutrition, by 2025 reach the international target for stunted children <5 years of age
2206	Joint Care or Family Development for Toddlers (BKB)		2.2.2	Indicator 2.2.2—prevalence of malnutrition in children aged <5 years
2301	Village Road Maintenance		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2302	Maintenance of Neighborhood/Alley Roads		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2303	Maintenance of Farming Business Roads		2.3.2	Indicator 2.3.2 Average income of small-scale agricultural producers by type and customary status
2304	Maintenance of Village-Owned Bridges		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2305	Maintenance of Village Road Infrastructure (Culvert, Sewer, Box/Culvert Slab, Drainage, Other Road Infrastructure)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2308	Maintenance of Village-Owned <i>Embung</i>		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
2310	Development/Rehabilitation/Improvement/Paving of Village Roads		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2311	Construction/Rehabilitation/Improvement/Paving of Residential Neighborhood Roads/Alley		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector

Table 3. Cont.

Village Fund Activity Codes	Village Fund Activity Description	SDG#2 Targets	SDG#2 Indicators	SDG#2 Indicator Descriptions
2312	Development/Rehabilitation/Improvement/Paving of Agricultural Business Roads		2.3.2	Indicator 2.3.2. Average income of small-scale agricultural producers by type and customary status
2313	Construction/Rehabilitation/Improvement/Hardening of Village-Owned Bridges		2.A.1	Indicator 2.A.1.—government expenditure index for agriculture
2314	Development/Rehabilitation/Improvement of Village Road Infrastructure (Culvert, Sewer, Box/Culvert Slab, Drainage, Other Road Infrastructure)		2.A.1	Indicator 2.A.1.—government expenditure index for agriculture
2319	Development/Rehabilitation/Improvement of Village <i>Embung</i>		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
2323	Providing stimulants for the development of padukuhan infrastructure		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2324	Village Transportation Management		2.3.1	Indicator 2.3.1—Agricultural value added divided by the number of workers in the agricultural sector (IDR)
2402	Maintenance of Village-Owned Infiltration Wells		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2403	Maintenance of clean water sources belonging to the village (springs/reservoirs for collecting rainwater/drilling wells, etc.)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2404	Maintenance of Clean Water Connections to Households (piping, etc.)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2405	Maintenance of Residential Sanitation (Culvert, Sewer, Trench, etc., outside road infrastructure)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2408	Maintenance of Wastewater Disposal Systems (Drainage, Household Wastewater)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2410	Construction/Rehabilitation/Improvement of Infiltration Wells		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2411	Development/Rehabilitation/Improvement of Village Owned Clean Water Sources (Springs/Tandon for Rainwater Storage/Drilling Well, etc.)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2412	Construction/Rehabilitation/Improvement of Clean Water Connections to Households (piping, etc.)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2413	Construction/Rehabilitation/Improvement of Settlement Sanitation (Culvert, Sewer, Trench, etc., outside road infrastructure)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector

Table 3. Cont.

Village Fund Activity Codes	Village Fund Activity Description	SDG#2 Targets	SDG#2 Indicators	SDG#2 Indicator Descriptions
2416	Construction/Rehabilitation/Improvement of Wastewater Disposal Systems (Drainage, Household Wastewater)		2.A.2	Indicator 2.A.2. Total development assistance and other assistance in the agricultural sector
2419	Land Clearance		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
2501	Village Owned Forest Management		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
2502	Village Environmental Management		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
2503	Training/Outreach/Counseling/Awareness about Environment and Forestry		2.4.1	Indicator 2.4.1. establishment of sustainable food agriculture areas
3108	Providing Social Benefits for the Poor		2.1.2	Indicator 2.1.2—prevalence of population with moderate or severe food insecurity, based on experience on the scale of food insecurity
4101	Maintenance of Karamba/Inland Fishery Ponds belonging to the Village		2.2.2.(C)	Indicator 2.2.2. (C). The quality of food consumption is in accordance with the expected food pattern score; and the level of fish consumption
4102	Maintenance of Village-Owned River/Small Fishing Ports		2.2.2.(C)	Indicator 2.2.2. (C). The quality of food consumption is in accordance with the expected food pattern score; and the level of fish consumption
4103	Maintenance of Village-Owned River/Small Fishing Ports		2.2.2.(C)	Indicator 2.2.2. (C). The quality of food consumption is in accordance with the expected food pattern score; and the level of fish consumption
4104	Development/Rehabilitation/Improvement of Village-Owned River/Small Fishing Ports		2.2.2.(C)	Indicator 2.2.2. (C). The quality of food consumption is in accordance with the expected food pattern score; and the level of fish consumption
4105	Fishery Assistance (Seeds/Feed/etc.)		2.2.2.(C)	Indicator 2.2.2. (C). The quality of food consumption is in accordance with the expected food pattern score; and the level of fish consumption
4106	Training/Technical Guidance/Introduction to Appropriate Technology for Inland Fisheries/Fishermen	2.A		target 2A—expansion of agriculture, productive capacity and plant and animal gene banks in developing countries
4201	Increased Production of Food Crops (Production Tools and agricultural processing, rice/corn milling, etc.)		2.5.1	Indicator 2.5.1—the number of varieties of poultry and animals for released food
4202	Increase in Animal Husbandry Production (Production Tools and livestock processing, stables, etc.)		2.5.1	Indicator 2.5.1—the number of varieties of poultry and animals for released food

Table 3. Cont.

Village Fund Activity Codes	Village Fund Activity Description	SDG#2 Targets	SDG#2 Indicators	SDG#2 Indicator Descriptions
4203	Strengthening Village Level Food Security (Lumbung Desa, etc.)		2.4.1	Indicator 2.4.1.—establishment of sustainable food agriculture areas
4204	Maintenance of Tertiary/Simple Irrigation Channels		2.A.1	Indicator 2.A.1.—government expenditure index for agriculture
4205	Training/Bimtek/Introduction to Appropriate Technology for Agriculture/Animal Husbandry		2.5.1	Indicator 2.5.1- the number of varieties of poultry and animals for released food
4207	Irrigation Channel Construction/Maintenance Activities		2.A.1	Indicator 2.A.1.—government expenditure index for agriculture
4208	Procurement of plant and livestock seeds		2.5.1	Indicator 2.5.1—the number of improved plant and animal varieties for released food
4209	River Normalization/river restoration activities		2.A.1	Indicator 2.A.1.—government expenditure index for agriculture
4503	Procurement of Appropriate Technology for Non-Agricultural Rural Economic Development	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge, and other non-agriculture by 2030.
4603	Village BUM Equity Participation	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge, and other non-agriculture by 2030.
4701	Maintenance of Village Markets/Kiosks owned by the Village	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge, and other non-agriculture by 2030.
4702	Development/Rehabilitation/Improvement of Village Markets/Kiosks belonging to the Village	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge and other non-agriculture by 2030.
4703	Village level small industry development	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge and other non-agriculture by 2030.
4704	Formation/Facilitation/Training/Assistance for productive economy business groups (craftsmen, traders, home industries, etc.)	2.3		Target 2.3.—double agricultural productivity and income of small-scale food producers for women, indigenous people, through safe and equal access to land, knowledge and other non-agriculture by 2030.

Table 3. Cont.

Village Fund Activity Codes	Village Fund Activity Description	SDG#2 Targets	SDG#2 Indicators	SDG#2 Indicator Descriptions
4705	Procurement, construction, utilization and maintenance of facilities and infrastructure for services and small industries that are focused on the one village one superior product policy	2.A		Target 2.4.—2030, ensure sustainable food production systems and resilient agriculture that increase productivity, progressively improve soil and land quality
5100	Disaster management	2.4		Target 2.4.—2030, ensure sustainable food production systems and resilient agriculture that increase productivity, progressively improve soil and land quality

Source: Data processing result.

Next, the mapping of village funds was carried out based on the activity code against SDG#2 targets and indicators in all Indonesian villages. The results of mapping village funds against SDG#2 and their configuration are analyzed in the description below.

4.3. Results of Mapping Village Funds against All SDG#2 Targets and Indicators

Data on village funds for all Indonesian villages are presented in the mapping of each target and indicator. The results of the mapping in the form of Village Fund allocation configurations against goal 2 can be seen in Figure 4.

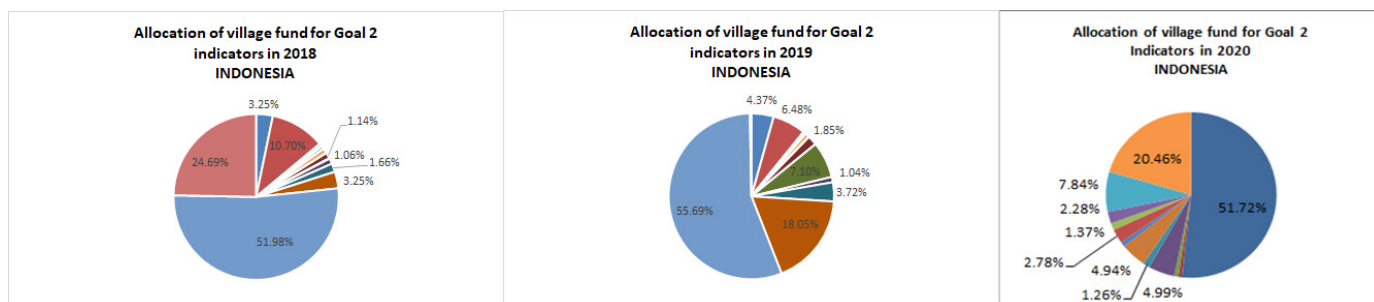


Figure 4. Configuration of Indonesia Village Fund allocation for SDG#2 in 2018–2020.

Figure 4 shows that in 2018–2020, Indonesia allocated referred Village Funds to fight hunger which were prioritized based on on SDG#2 indicators: indicator 2.1 namely prioritizes eliminating hunger and providing nutritious food; indicator 2.A.2 namely prioritizes the agriculture sector and regional development; indicator 2.A.1 namely prioritizes agriculture expenditure; indicator 2.3 namely prioritizes increasing agriculture productivity; and indicator 2.3.2 namely prioritizes small scale agriculture income.

Observing the results of the mapping of the allocation of Village Funds against SDG#2 targets and indicators at Figure 4, and taking into account Figure 3, which is the pattern of reducing hunger levels in Indonesia, it can be concluded that the allocation of Village Funds can be intensified by aiming at indicators (2.1), (2.A.2), (2.A.1), (2.3), and (2.3.2).

4.4. The Impact of the 2018–2020 Village Fund on SDG#2 in All Indonesia Villages

To test the impact of Village Fund allocations on SDG#2, data processing with the use of regression is subsequently carried out using SPSS V-6. The independent variable is the Indonesia Village Fund Data with 251 activity codes per village. The dependent variable is the allocation of Village Funds to targets and indicators contained in SDG#2.

The regression result of the 2018–2020 Village Fund Allocation toward SDG#2 per province is shown in Table 4.

Table 4. The Result of Village Fund Regression towards SDG#2 in Indonesia.

Regression Statistics:								
Multiple R								0.0
R Square								0.0
Adjusted R Square								0.0
Standard Error								140,654,979.4
Observations								870,670.0
	Coefficient	Standard Error	<i>tStat</i>	<i>p-value</i>	Lower 95%	Upper 95%	Lower 95%	Lower 95%
Intercept	103,238,244.2	174,639.4	591.2	-	102,895,956.8	103,580,531.6	102,895,956.8	102,895,956.8
46,100,000	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0

Source: Data processing result.

Table 4 shows the effect of the Village Funds 2020 on SDG#2 targets, and indicators are significant with a *p*-value of 0.00 at an alpha of 5%, where Y is the Village Fund allocation for SDG#2 and X is the total of the Village Fund. This significant effect shows that each increase in the allocation of Village Funds will increase the funds to fight hunger. The meaning of this statistical result is that the Village Fund is proven to be allocated effectively to fight hunger when it is aimed at indicators (2.1.), (2.A.2), and (2.A.1).

4.5. Relationship between Village Fund Allocation to Achieve SDG#2 and Decreasing Hunger Rates

The success of implementing SDGs in rural areas is carried out under supervision and control by the Ministry of Villages, Development of underdeveloped areas and Transmigration, Governors, and Village Heads. An example of this control, for example, can be found in the village of Walari which applies an inclusive village approach with the principle of “no one left behind” (Iskandar et al. 2020). An inclusive village is a village for all residents, meaning that development involves all villagers, for the purpose of increasing their empowerment, and whose implementation is continuously subjected to careful monitoring.

The level of hunger in Indonesia shows a pattern that continued to decline from the period of 2000 to 2020. This decline indicates a better condition, due to the decreasing level of hunger, and this is in line with the Government’s target to eliminate hunger in Indonesia by 2030.

The reality of the pattern of decreasing hunger levels is apparently influenced by the allocation of village funds as a government policy to tackle poverty and hunger, and to increase village community empowerment. By matching 250 village fund activity codes in each village, with the targets and indicators in goal 2, and mapping the allocation of village funds with SDG #2, it has been found that the four provinces prioritize the allocation of funds to increase agricultural productivity in their area. There is an awareness that the higher the productivity of agricultural products, the more the level of hunger can be reduced, such as the results of statistical regressions which show that the 2018–2020 Village Fund allocation for SDG#2 in Indonesia has had a significant impact.

Research Implication

This research has several practical implications, especially for the development of local government policies in tackling hunger in villages. The implications of this policy can be seen in Figure 5.

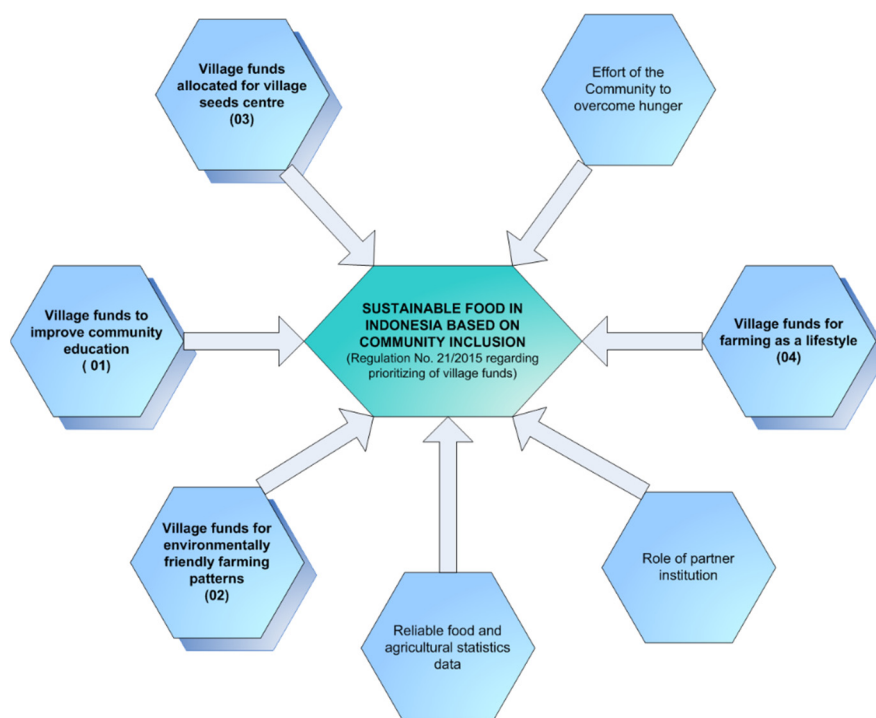
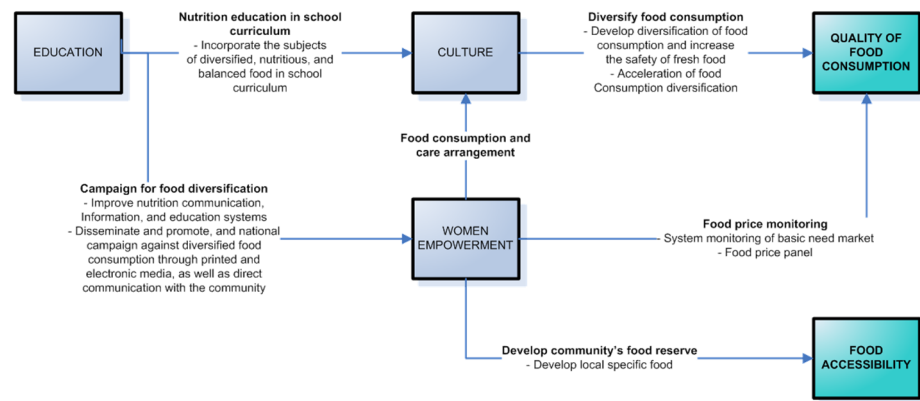


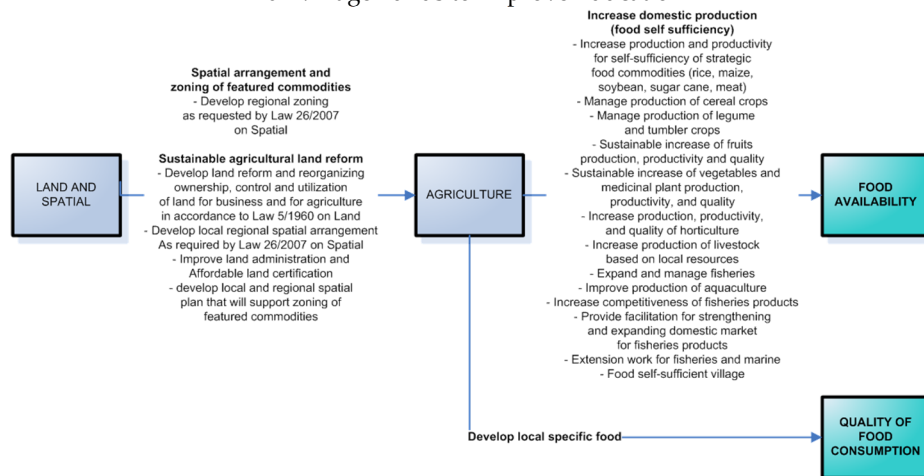
Figure 5. Village fund-based sustainable food inclusion policy. Source: data processing result.

Figure 5 shows that, based on the results of this study, there is a large delay in the reduction of hunger, especially for Papua. This study recommends that Village Funds in Papua must support sustainable food inclusion policies. Village funds must be allocated to strengthen this policy through the allocation of various elements. (1) Village seed centers where every village, for instance in Papua, strives to have a seed center for both wheat/rice and cow seeds so that each harvest in each village can contribute sufficiently to the needs of the entire population (Iskandar et al. 2020). (2) An increase in public education can ensure human resources which are more educated and knowledgeable, so that management in the agricultural sector is more productive so that it can overcome food insecurity (Nakao 2019; Iskandar et al. 2020). (3) Non-governmental organizations have contributed a great deal to overcoming hunger (Papua Food Security Council et al. 2019). The flow of economic assistance from the community through social institutions can be maintained when considering that the Indonesian people have a closely-knit culture of mutual cooperation. (4) The role of formal institutions such as the Ministry of Social Affairs, the Ministry of Health, and the central government has a very large impact in dealing with hunger, especially in abandoned villages, such as Papua. (5) Environmentally friendly farming patterns are also an important reference so that the agricultural sector can be sustainable (D. Mulyadi 2015). (6) The role of partner institutions has been proven to be able to tackle hunger, such as in Mimika Province in Papua, which collaborated with community institutions which aimed to reduce the number of stunted children (M. Mulyadi 2010). (7) Planting as a lifestyle, as carried out by the Minister of Forestry who planted 1 billion Trembesi trees together with students from various universities, with the aim of making the younger generation like agriculture (Indonesia Islamic University (IIU) 2020).

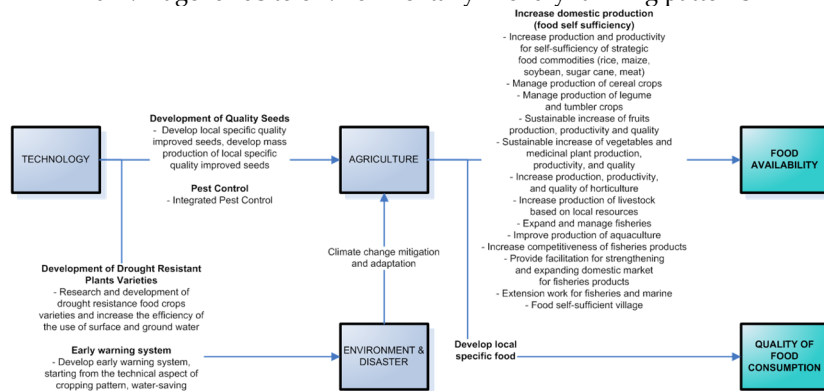
To explain more meaningful food security or sustainability in all areas of Indonesian villages, the following Figure 6 describes the detailed Villages Fund Program in Indonesia.



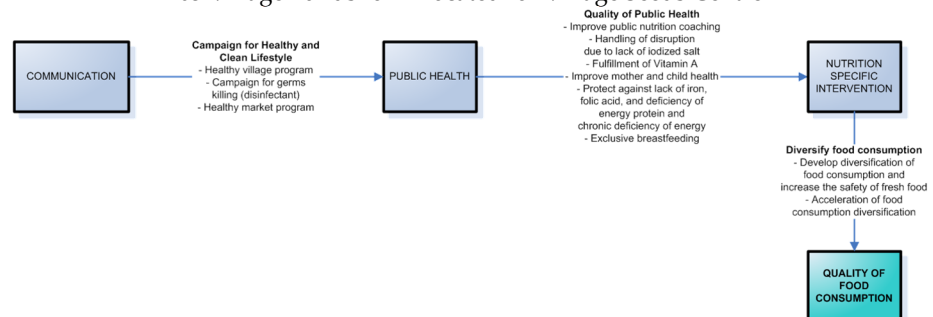
01 Village Funds to Improve Education



02 Village funds to environmentally friendly farming patterns



03 Village Funds for Allocated for Village Seeds Centre



04 Village Funds for Healthy and Clean Lifestyle (e.g., Farming as a Lifestyle)

Figure 6. Detailed village fund program for sustainable food inclusion. Source: data processing result.

5. Conclusions

The data configuration of poverty and hunger in Indonesia during the 2000–2020 period shows a decreasing pattern. This decrease means that the conditions were better because the amount of hunger was decreasing. The results of the mapping of village funds on the implementation of the SDG#2 target and indicators show the generally allocated village funds, especially for indicators (2.1), (2.A.2), (2.A.1), (2.3), and (2.3.2) of the total for SDG#2. The meaning of the decreasing level of hunger in Indonesia and the intensive allocation of village funds in indicators (2.1), (2.A.2), (2.A.1), (2.3), and (2.3.2) show that village funds contribute to overcoming hunger. In addition to having a statistically significant impact (p -value 0.00) between the allocation of village funds and SDG#2, the village funds are proven to be effective in fighting hunger if they are allocated to indicators (2.1), (2.A.2), (2.A.1), (2.3), and (2.3.2).

Therefore, this study has tested and proven that the allocation of Village Funds from the government for all of rural Indonesia has proven effective in reducing poverty and hunger. However, the central and local governments need to focus more on addressing poverty and hunger. In particular, what is really needed is help in the form of assistance, knowledge transfer, and good farming practices that produce quality agricultural products since conditions there require more knowledge. In addition, more attention is needed to assist village officials who will distribute these village funds to farmers, so that the allocation of village funds can be better managed according to their needs and allocations in each of the rural areas studied specifically, and throughout rural areas in Indonesia in general. This is important to accelerate the achievement of “zero hunger” as is the second SDG point by 2032.

The recommendation to other countries to use the Village Fund’s policy government and its continuation, and define the hunger based on human physiological needs for food and nutrition can solve the impact of COVID-19. Consequently, other countries can benchmark the Indonesian Village Fund Program by intensifying its allocation to indicators (2.1), (2.A.2), (2.A.1), (2.3), and (2.3.2).

Village Funds need to be managed comprehensively by considering various other aspects or dimensions, namely education, friendly farming (agriculture), a village seeds center, and a healthy and clean lifestyle. This study has data processing, that should be carried out directly concerning the effect of Village Fund allocation on achieving SDG#2 in reducing hunger, using panel data statistical software which uses a longer period, as its main limitation. Therefore, further researchers are suggested to elaborate on this matter further, and confirm the results of the FGD by more complex analysis with statistical tools.

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