

Covid 19, Inequality and Poverty in Rural Indonesia

Covid 19, Ketimpangan dan Kemiskinan di Pedesaan Indonesia

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ABSTRACT

The Covid-19 pandemic has had an impact on inequality and poverty in rural Indonesia. This study aims to identify inequality and poverty during the Covid-19 pandemic, as well as program policies for poor families after the Covid-19 pandemic in rural Indonesia. The combination of quantitative and qualitative methods with the Drone Participatory Mapping (DPM) approach is the preferred method used by researchers to obtain Precision Village Data (PVD). From this data, the researcher used the Lorenz Curve to determine the inequality and poverty of families in three villages (Sibandang, Cikarawang and Tegallalang). The results showed that the three research villages were in low inequality conditions (Sibandang Village with the typology of plantation village = 0.39; Cikarawang Village with the typology of food crops village = 0.36; and Tegallalang Village with the typology of rice field village = 0.35) during the Covid-19 pandemic. From this inequality, every poor family in rural Indonesia has a different income. Therefore, the policy to restore the condition of poor families in rural Indonesia must address three main aspects: education, employment and income.

Keywords: Covid-19, inequality, poverty, rural in Indonesia



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INTRODUCTION

The world is currently facing a very difficult challenge in dealing with the Covid-19 pandemic. WHO (World Health Organization) has announced that the world is at a dangerous point with Covid-19 (Kvieskienė et al., 2021; Peters, 2021; Sjaf, 2021; Sjaf et al., 2021; Visagie & Turok, 2021). Covid-19 has taken its toll with thousands of deaths, crippled the economy, and raised poverty to an alarming level (Crawley, 2021; Fatton, 2021). The Food and Agriculture Organization (FAO) reports that a pandemic that endangers world food security is expected to push back the 2nd target of the Sustainable Development Goals (SDGs) by 2030, that is eradicating hunger (FAO, 2020). This FAO report reminds us of (1) food is a matter of life and death of a nation; (2) the essence of Indonesia's economic development is the development of the agricultural sector; and (3) villages as the basis for Indonesia's economic growth and equity (Sampean & Sjaf, 2020; Sjaf et al., 2020; Sjaf, Sampean, et al., 2022). Access to food sources during this pandemic depends on diversified and increasingly irregular sources, on the other hand, food provision involves a set of knowledge and skills essential for social reproduction that is not included in existing emergency programs (Gracia-Arnaiz et al., 2021; Milán-García et al., 2019).

Covid-19 has also resulted in worsening poverty and unemployment rates (Atutxa et al., 2021; Rivera & Castro, 2021; Sjaf, 2021). In Indonesia, as of July 31, 2020, the total number of workers, both formal and informal, affected by Covid-19 reached more than 3.5 million people nationwide (Kemenaker, 2020). The results of research from the Indonesian Institute of Sciences (LIPI) showed similar results, where as many as 15.6 percent of workers experienced layoffs and 40 percent of workers experienced a decrease in income, including 7 percent of workers' incomes down to 50 percent (LIPI, 2020). The condition of the world's working class also appears to be the same, in terms of the International Labor Organization (ILO) report issued in April 2020 which stated that the massive economic disruption due to the Covid-19 crisis affected the world's 3.3 billion workforce (ILO, 2020). This sharp and unexpected decline in economic activity led to a drastic decline in employment, both in terms of the number of jobs and aggregate hours worked. Using the calculation of working hours, the Covid-19 pandemic is predicted to eliminate 6.7 percent of working hours globally or equal to the layoffs of 195 million workers. The impact of Covid-19 is very much felt by lower-level workers who have a much lower chance of entering professional work (Duta & Iannelli, 2018).

The description above does not exclude rural areas where Covid-19 has had an impact on increasing the poverty rate. This condition is exacerbated by poverty in rural areas which is higher in number compared to urban areas prior to the Covid-19 pandemic. All of this is because development encourages economic growth which is inversely related to poverty reduction (Garza-Rodriguez, 2018). Warda et al. (2019) mention that the problem of socioeconomic progress in rural areas causes higher inequality because of the hierarchical social structure in rural areas. The results of development that should be felt equally by various levels of society are instead focused on certain groups who are in a position above the village or are called elitist groups (Sampean & Sjaf, 2020).

In a society that is in a hierarchical structure, the benefits of development programs cannot be felt by the lower classes of society. Thus, the issue of access to development programs is a key issue. It is relatively difficult for lower-class people to access well-available development programs, on the contrary, development programs are easier and tend to accommodate the interests and needs of upper-class people. This is a condition that further strengthens the occurrence of inequality in rural areas.

The Covid-19 pandemic adds to the threat to public health amid the dynamics of vaccine distribution and access in Indonesia which has not been evenly distributed to all people, including rural residents. Rural residents compete with urban residents to access health facilities that are not yet fully available in the village (Hardhantyo & Chuang, 2021; Simanjorang et al., 2022). This marginalization of rural communities is related to economic poverty, sustainable exclusion, and social inequality in villages (Xu & Takahashi, 2021). The decline in the level of income and the quality of household health in rural communities has an impact on the declining level of household welfare. Lockdowns imposed in many countries to contain the spread of COVID-19 have important consequences for the domestic sphere (Dominguez-Folgueras, 2021). This decline in the level of traditional family welfare affects poverty at the individual level (Antonelli & De Bonis, 2021; Visagie & Turok, 2021). It seems that poverty is concentrated in poor families which is related to the low support for public policies to improve the conditions of these poor families (Antonelli & De Bonis, 2021). Poor families may appear to have improved their welfare through social spending, but in reality, this practice is not good for poor families

in future poverty analysis. As a result, the idea of social investment through social spending may not be entirely true for the poor, especially without clear compensatory trade-offs for increasing family income (Nkrumah et al., 2021; Visagie & Turok, 2021).

The issue of inequality and poverty has always been a fundamental problem in the study of development in rural areas (Anastasiou et al., 2021; Peterson, 2017; Xu & Takahashi, 2021). The Covid-19 outbreak that has occurred all over the world (and Indonesia is no exception), is interesting to explore its impact on the socio-economic conditions of people in rural areas (Belitski et al., 2022; Delardas et al., 2022; Rasul et al., 2021). Therefore, this study aims to analyze the conditions of inequality and poverty in rural Indonesia caused by Covid-19. From this goal, it is hoped that there will be a formulation of priority development programs in rural areas as an effort to respond to the current inequality and poverty. Furthermore, as an effort to see the pattern that occurs in Indonesia, this study takes cases in three village locations that represent Indonesia, including Sibandang Village, North Tapanuli Regency-North Sumatra which represents western Indonesia (Sumatra Island); Cikarawang Village, Bogor Regency-West Java which represents the central part of Indonesia (Java Island); and Tegallalang Village, Gianyar Regency-Bali as a representation of eastern Indonesia (Bali and Nusa Tenggara).

METHODS

In order to comprehensively capture the conditions of inequality and poverty in rural Indonesia up to the level of Hamlet or other names (by name, by address, and by coordinates), the Drone Participatory Mapping (DPM) approach is used to obtain Precision Village Data (PVD) from the entire family population living in the study area (Sjaf et al., 2020; Sjaf, Sampean, et al., 2022). DPM is an inclusive approach that connects the relationship between humans and technology to collect precision village data, taking into account spatial aspects, digital technology, village community participation, and census (Figure 1).

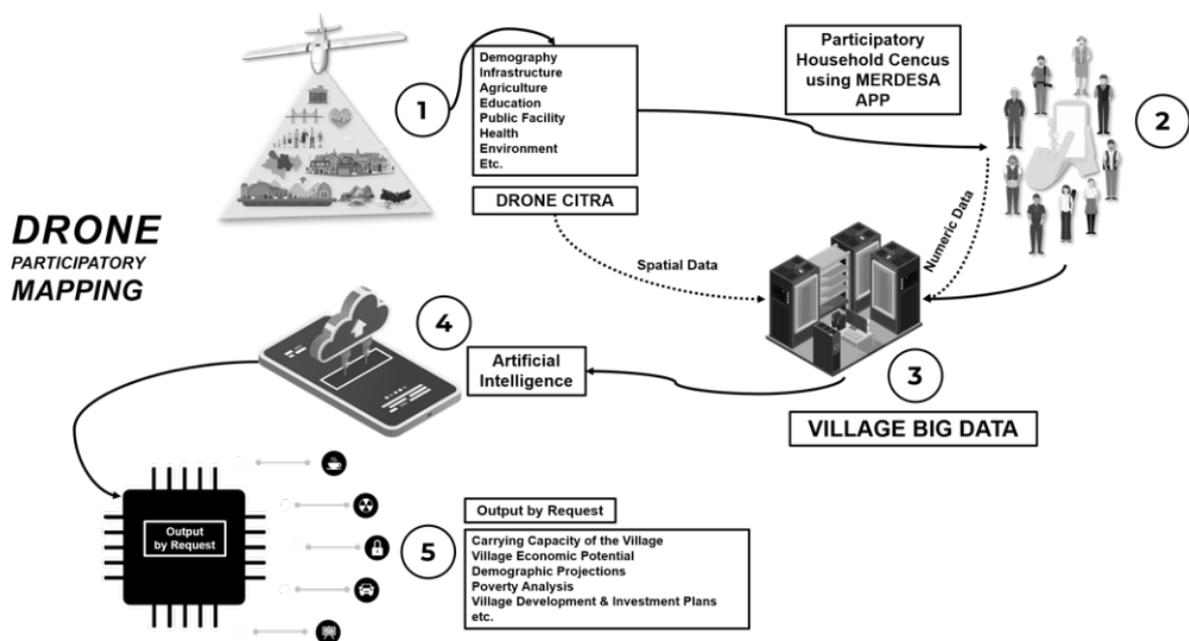


Figure 1. Five stages of obtaining Precision Village Data through the DPM approach: (1) using drone technology to produce high-resolution images; (2) conducting a family census based on citizen participation using the Merdesa Census application; (3) both the spatial data obtained through drone images and thematic maps, as well as the census results, are stored on the server; (4) compiling algorithms according to analysis needs; and (5) answer the needs of villages and residents through the Partnership 4.0 application.

Furthermore, the purpose of using the DPM approach is so that the social and economic conditions of residents in rural areas can be described with precision so that the target families can be quickly identified.

Participant

This study involved 9 researchers, 10 research assistants, 33 government officials in three villages, 122 village enumerators (20 people from Sibandang Village, 35 people from Cikarawang Village, and 67 people from Tegallalang Village), and 4,610 families as respondents consisting of 294 families from Sibandang Village; 2,544 families from Cikarawang Village; and 1,772 families from Tegallalang Village.

Procedure and instrument

Five procedures and instruments were used in the research, including (1) training and capacity building for village enumerators; (2) taking aerial photographs of village areas using drones; (3) participatory digitization using ArcGIS; and (4) family census using the MERDESA census application. The following describes the five procedures in question:

Training and capacity building for village enumerators. Training and capacity building are intended for village youths who become village enumerators. With the approval of the village government, each hamlet/banjar delegates at least 2 village youths to attend the training. The orientation of the training provided was the importance of village data as the basis for village development planning, as well as technical capacity building in applying the instruments needed in this approach, including drone technology, Geographic Information System (GIS), and the MERDESA census application.

Aerial photo data collection of the village area. Aerial photo data collection of the village area is carried out in a participatory manner with village youths. The activities carried out are: determining the coordinates of village boundaries, determining drone flying points, taking aerial photos of village areas with drones, and the process of aerial photo mosaics. This procedure requires computer/laptop instruments, Global Positioning System (GPS), drones, and ArcGIS.

Participatory digitization. The participatory digitization stage is carried out at the hamlet/banjar level to identify in detail each material that appears in the image. Those identified in this procedure include village facilities (village offices, schools, health centers, places of worship, sports buildings, markets, and so on), village potential (rice fields, monoculture plantations, mixed plantations, ponds, and so on), village infrastructure (village roads, farm roads, irrigation, bridges, dams, and so on), as well as community residential areas and whatever is visible in the image. The instrument used in this procedure is a computer equipped with spatial data processing software.

Operationalization of the MERDESA Census application. This procedure is carried out by village youths who are enumerators. In the census process, enumerators are equipped with the MERDESA Census application which can be accessed via an Android smartphone. Each enumerator will visit residents' homes to collect information, including respondents' identity, land ownership data, education level, occupation, and others.

Data Analysis. The Precision Village data obtained through the DPM approach was analyzed in stages. First, spatial analysis to determine the typology of villages in the research location. This analysis focuses on land use maps generated from drone images obtained through the DPM approach; second, inequality analysis using the Gini ratio measurement. The Gini ratio is an instrument used to measure the inequality of population distribution based on income variables. This variable is obtained from the level of family expenditure per month, which can be reduced to individual expenditure per month, as an approach to obtaining the amount of income.

The calculation of the Gini ratio measurement or index is based on the Lorenz Curve, which is a cumulative expenditure curve that compares the distribution of the expenditure variable (measuring the amount of income) with a uniform distribution that represents the cumulative percentage of the population. The Gini coefficient is a measure of inequality or aggregate inequality whose numbers range from 0 to 1. The Gini coefficient is obtained by calculating the ratio of the planes between the diagonal line and the Lorenz Curve, where the area of half of the Lorenz curve lies (Figure 2).

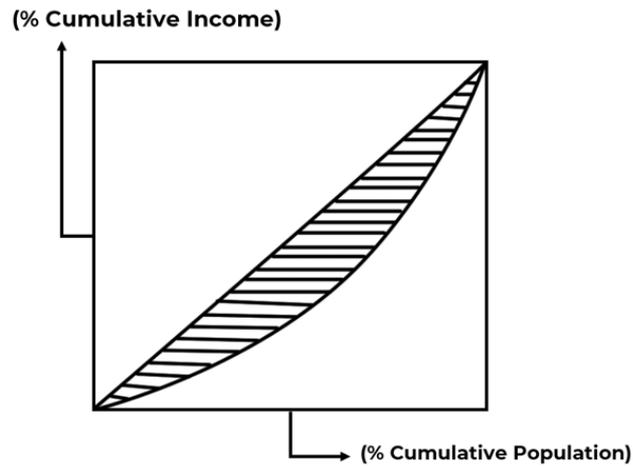


Figure 2. Lorenz curve illustration

The Lorenz curve will be further away from the diagonal line if the ratio between the cumulative percentage of income (based on expenditure) is not directly proportional to the cumulative percentage of the population or vice versa. In short, if the cumulative percentage of income accumulation of the population in a particular group is too high compared to the cumulative percentage of the population in other groups, then this condition causes the Lorenz Curve to move away from the diagonal line, expands the shaded area, and is interpreted as an unequal condition.

Then the size of the income distribution, as seen from the expenditure, is classified into several classes (lowest to highest) based on the scale of the level of expenditure per month. Thus, the lowest class is the class group with the lowest level of expenditure, thus this class can be assumed to be the poorest class from the other classes. The value of the boundary coefficient of inequality between classes can be seen in **Table 1**.

Table 1. Value of inequality boundary coefficient based on income distribution

| Coefficient value | Income distribution |
|-------------------|----------------------------|
| < 0,4 | Low inequality rate |
| 0,4 - 0,5 | Medium level of inequality |
| > 0,5 | High inequality rate |

Source: Todaro, MP. & Smith, SC. (2002)

Third, poverty analysis uses World Bank (WB) measurements. The WB defines poverty as a loss of well-being. This is measured through a person's ability to access available resources (consumed goods), or in other words, it can be seen through income/expenditures. Furthermore, WB uses the poverty threshold based on income/expenditure per day, namely residents who have a total income/expenditure of less than 1.9 US\$ per day. This nominal is equivalent to a value of IDR 833,620 per month at an exchange rate of 1 US\$ worth IDR 14,414 (Sari 2020; Haughton and Khandker 2009). This condition will provide an overview of the purchasing power of the people to achieve a certain level of adequacy. In line with WB, the Indonesian Central Statistics Agency (BPS) defines poverty as the inability of individuals to meet the minimum basic needs for a decent life (BPS, 2021a). This concept refers to the handbook on poverty and inequality published by WB where poverty is seen as the ability from an economic point of view to meet basic and non-food needs, from the expenditure side (Haughton and Khandker 2009). The poverty line reflects the minimum expenditure required for a person to meet the basic needs of his life for 1 month.

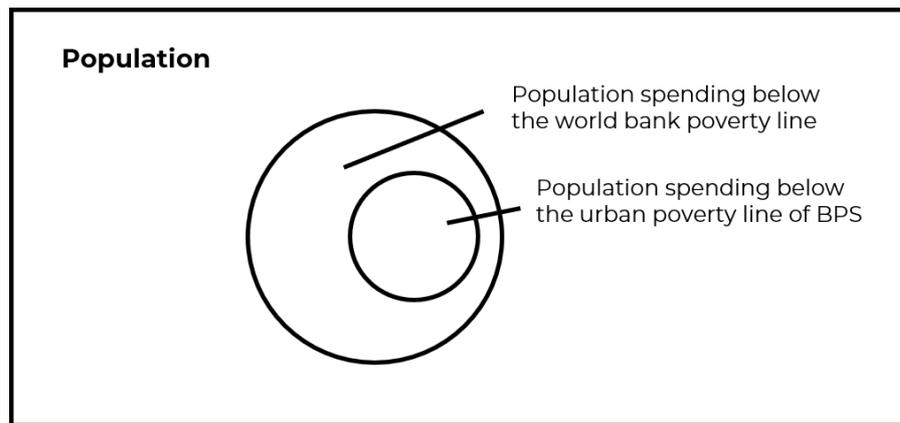


Figure 3. Population grouping based on expenditure indicators.

The poverty line consists of the food poverty line and the non-food poverty line. The food poverty line is the value of the minimum food expenditure per capita per month from 45 types of commodities. The non-food poverty line is the minimum expenditure value for non-food items in the form of: clothing, housing, education, and health. Therefore, the BPS poverty line is different for each city or district. The average value of the poverty line based on expenditure in Indonesia is IDR 442,121 (BPS, 2021b, 2021a). This is what makes the city/district average poverty line (based on BPS) below the WB poverty line. (Figure 3), resulting in a slice of every individual whose spending is below the city/district poverty line, which is definitely below the WB poverty line.

Table 2. Poverty categories based on BPS and WB expenditure indicators

| Poverty category | Spending below the poverty line | |
|--------------------------|---------------------------------|----|
| | BPS | WB |
| Very poor/extremely poor | ✓ | ✓ |
| Poor | ✓ | ✗ |
| Not Poor | ✗ | ✗ |

Source: BPS (2021b)

Table 2 shows that families with income/expenditure below the WB poverty line and above the city or district poverty line are poor families/individuals. Meanwhile, families/individuals with income/expenditures below the city or district poverty line are categorized as very poor or extreme poor (Table 2).

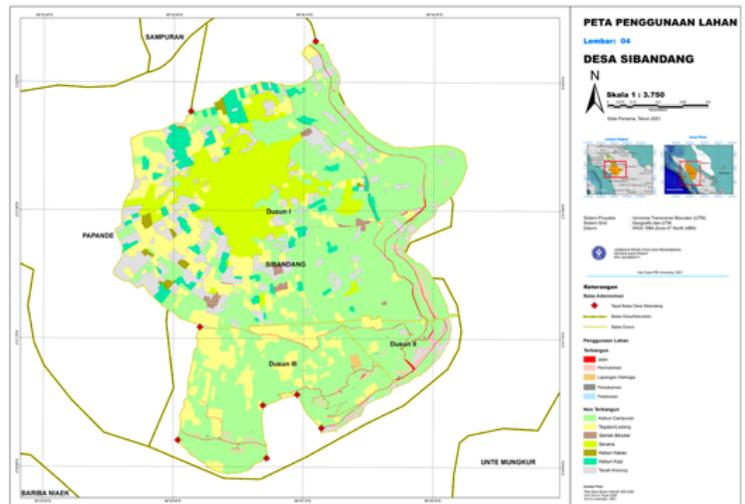
RESULT AND DISCUSSION

This section presents the results of an analysis of poverty and inequality from three research locations that have different characteristics. For village characteristics, spatial analysis is carried out by displaying land use maps from drone imagery. The results of the analysis are used to determine the typology of the village. From this village typology, an analysis of poverty and inequality was then carried out in the research location.

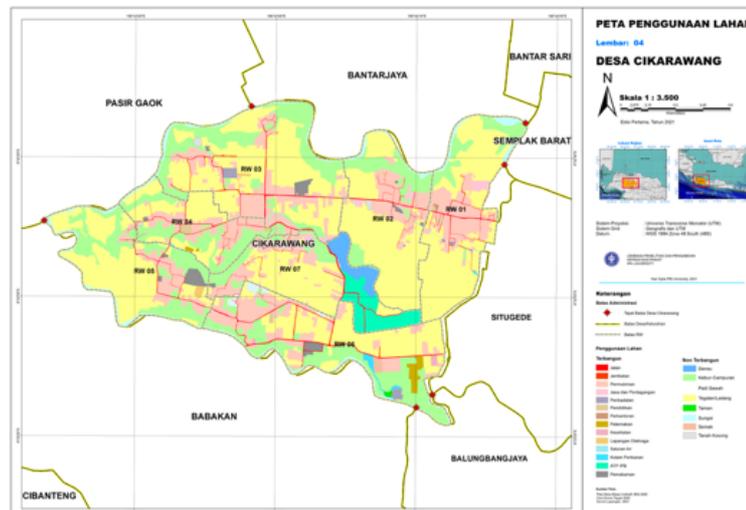
Village Typology and Poverty Characteristics

The three villages selected as research locations have different typologies based on land use. Sibandang Village, which is located in the North Tapanuli Regency, North Sumatra Province (Sumatra Island) has the typology of garden/plantation village. From the land use data in Sibandang Village, it was identified that cocoa plantations were the most dominant land use area (54.75 percent of the total village area of 309.2 hectares) compared to other land uses. Sibandang village is a village that is socio-culturally dominated by three sub-ethnic Batak (marga/clans), namely Rajagukguk (31.59 percent of a total of 294

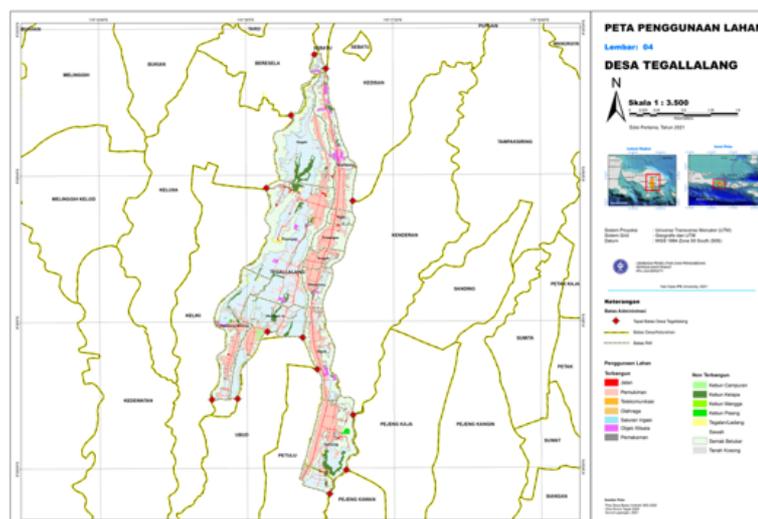
families), Simaremare (11.02 percent) and other Batak clans as much as 57.38 percent (Siregar, Simbolon, Sinaga, Naibaho, Sianturi, and others).



(a) Sibandang Village



(b) Cikarawang Village



(c) Tegallalang Village

Figure 4. Land use maps of the three research sites (Sibandang, Cikarawang and Tegallalang)

Unlike the previous village, Cikarawang Village is a village located on the island of Java, precisely in Bogor Regency, West Java Province. Cikarawang Village is a village identified as having a dominant land use of upland (cassava, sweet potatoes, secondary crops and others). The land use area is 46.25 percent of the total village area of 256 hectares. Thus, Cikarawang Village can be categorized as a village with a dry typology. Then socio-culturally, Cikarawang Village is dominated by ethnic Sundanese (94.51 percent of the total 2,544 families) and Non-Sundanese as much as 5.49 percent of the total families (Batak, Betawi, Malay, Bugis and others). Meanwhile, Tegallalang Village, Gianyar Regency, Bali Province when viewed spatially has the dominant land use as rice fields (30.63 percent of the total village area of 733.02 hectares). Although Tegallalang Village is dominated by ethnic Balinese, there is a dominant Pasek clan (39.87 percent of the total 1,772 families), followed by other Balinese clans (59.76 percent of the total family), such as: Arya, Dalem, Pande and others. Meanwhile, residents who are not ethnically Balinese are 0.38 percent of the total family. In summary, the typology of villages in the three research locations is presented in Table 3.

Table 3. Typology of villages in three research locations

| Research sites | | Current condition | | |
|----------------|-------------|-------------------|------------------|--|
| | | Island | Village typology | Socio-cultural conditions |
| 1. | Sibandang | Sumatra | plantation | Homogeneous (dominated by ethnic Batak with several clans) |
| 2. | Cikarawang | Java | Moor | Homogeneous (Sundanese ethnic dominance) |
| 3. | Tegallalang | Bali | Ricefield | Homogeneous (Balinese ethnic dominance) |

Table 3 shows the research locations are in three islands that have homogeneous socio-cultural conditions with different village typologies. Furthermore, if these three villages are associated with the pattern of distribution of poverty, then almost all regions have the same proportion of poor and non-poor, where the proportion of non-poor families exceeds 50 percent of the total rural families. The locations with the highest number of poverties are Sibandang Village as much as 20.07 percent; Tegallalang Village 19.02 percent; and Cikarawang Village 15.07 percent. Although Cikarawang Village has the lowest poverty percentage, the total family population in Cikarawang Village is much higher than the other two villages. Interestingly, in the case of Sibandang Village, which has the highest percentage of poverty, but has the lowest unemployment percentage compared to other villages. This shows that the poverty that occurs in Sibandang Village is not only caused by unemployment, but the existence of insufficient income to meet their needs.

So far, the measurement of poverty has always been oriented to the amount of income. This was chosen because it is considered to be the clearest and easiest way to classify who is poor and vice versa. However, this method according to Sen (1999) so limited and tend to be reductionist. Stiglitz, Sen, and Fitoussi (2010) emphasized that so far, countries that measure welfare based on Gross Domestic Product (conventional economy) have not been able to capture the quality of life or subjective welfare levels (Sjaf, Arsyad, et al., 2022; Sjaf et al., 2021). The criticism is very reasonable if the use of poverty measurement based on income is used as a universality to be applied in various parts of the world. Like the WB version of the poverty indicator, it is 2 dollars per day per capita and is applied worldwide. This can be used incorrectly because the nature of poverty is relatively dependent on local subjectivity.

Rural Inequality in Indonesia

This section will identify the distribution of income within the village scope. This measurement of income distribution is important because it can identify two things at once: (1) identify the families with the lowest incomes in the village, which are hereinafter referred to as poor families in the village; and (2) from the Lorenz Curve it can identify how the income distribution within the village is (Figure 5).

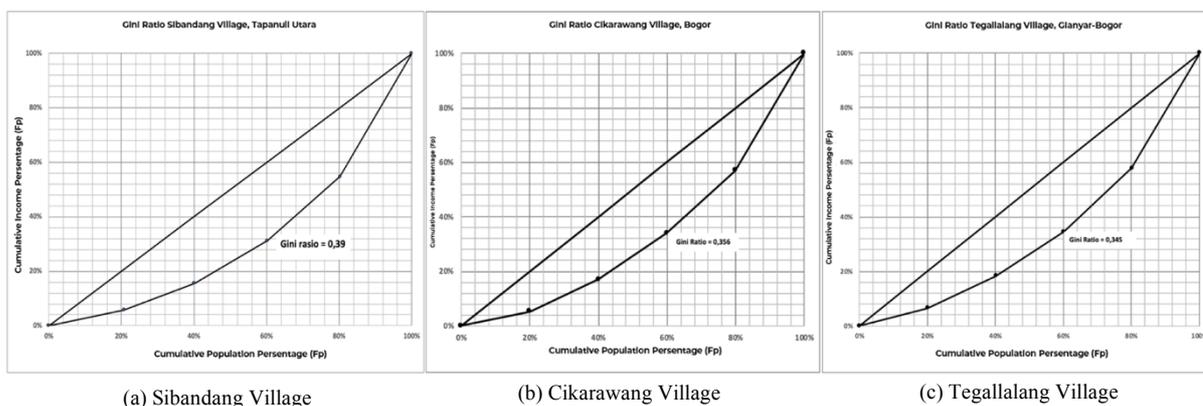


Figure 5. Land use maps of the three research sites (Sibandang, Cikarawang and Tegallalang)

Figure 5 informs that Sibandang Village has a village Gini ratio index of 0.39. This means that Sibandang Village is in a condition of low inequality approaching moderate inequality. Furthermore, if traced to the hamlet level, hamlet 1 contributed a high Gini ratio value (medium inequality) of 0.41; then followed by hamlet 3 by 0.38 (low inequality); and sub-village 2 by 0.36 (low inequality).

Furthermore, for Cikarawang Village, the result of measuring the village Gini ratio is 0.36. This means that Cikarawang Village has low inequality. However, there is a hamlet that contributes to the Gini ratio of moderate inequality, namely hamlet 7 of 0.44. The other hamlet is in Cikarawang Village contributed to low inequality, including hamlet 1 of 0.34; hamlet 2 of 0.33; hamlet 3 of 0.34; hamlet 4 of 0.33; hamlet 5 of 0.31; and hamlet 6 of 0.39.

Then for Tegallalang Village, the result of measuring the village's Gini ratio is 0.35 (low inequality). Of the 11 Banjar/hamlet within the scope of Tegallalang Village, only Banjar 1 contributed moderate inequality with a value of 0.40. Meanwhile, the other 10 Banjars have a Gini index ratio of 0.29–0.35.

From the measurement of the Gini ratio of the three villages above, it is further identified how the distribution of income so far has been obtained by the poorest families in the village. From the Gini ratio measurement, the population of the poorest families is always categorized into two, namely: The poorest 20 percent of families in the village and The poorest 40 percent of families in the village. In Sibandang Village, there are the poorest 20 percent of families (59 families) who earn 6 percent of the total income (IDR 29,304,160). Or it can be said that each poorest family has an average income of IDR 496,680 per month. Furthermore, if drawn more broadly, the poorest 40 percent of families (118 families) earn 16 percent (IDR 78,144,426) of the total income in the village. This means that the poorest family receives an average income of IDR 662,240 per month.

For Cikarawang Village, there are the poorest 20 percent of families (498 families) who get 5 percent of the total income (IDR 291,964,768). Or it can be said that each poorest family has an average income of IDR 586,274 per month. Meanwhile, if drawn more broadly, the poorest 40 percent of families (996 families) in the village earn 17 percent (IDR 992,680,213) of the total income in the village. This means that the average income of the poorest family is IDR 997,067 per month. Finally, for Tegallalang Village, the poorest 20 percent of families (354 families) earn 6 percent of total income (IDR 328,859,202). Or it can be said that each poorest family has an average income of IDR 927,932 per month. Meanwhile, if drawn more broadly, the poorest 40 percent of families (709 families) in the village get 18 percent (IDR 986,577,605) of the total income in the village. This means that on average the poorest families receive an income of IDR 1,391,898 per month. Table 4 shows a summary of the income distribution of poor families in the three research locations.

Table 4. Income distribution of poor families in Sibandang, Cikarawang and Tegallalang Villages

| Village | Number of Poor Families (20 percent poorest) | Income Distribution/ Month (Cumulative) | Monthly Income Distribution (Family) | Number of Poor Families (poorest 40 percent) | Income Distribution/ Month (Cumulative) | Income Distribution/ Month (Family) |
|-------------|--|---|--------------------------------------|--|---|-------------------------------------|
| Sibandang | 59 | 29,304,160 | 496,680 | 118 | 78,144,426 | 662,240 |
| Cikarawang | 498 | 291,964,768 | 586,274 | 996 | 992,680,213 | 997,067 |
| Tegallalang | 354 | 328,859,202 | 927,932 | 709 | 986,577,605 | 1,391,898 |

Table 4 further emphasizes that every poor family in rural Indonesia has a different income. This proves that poverty is relatively in accordance with the context of the social, economic, and ecological structure of a society. The Gini ratio measurement provides a reference for policy makers related to social security programs, empowerment of poor families in order to improve the welfare of poor families. This is very possible because the database used, namely PVD, is able to trace who the poor families are, where their houses are located, and what their coordinates are.

Right Policy

Socio-economists use the Gini ratio to calculate the income inequality of the population and determine the quality of life of the lowest (poorest) to highest (richest) groups of life. Using PVD, the rural Gini ratio in three of Indonesia's islands was identified as below 0.4 (low income inequality). In rural Sumatra, which has a plantation agriculture typology, the Gini ratio is 0.39 with an average per capita income per month of 1.6 million. Meanwhile, in rural Java and Bali with the typology of food crops and rice fields, the Gini ratio is 0.36 with an average monthly per capita income of IDR 2.3 million (Java) and IDR 3 million (Bali).

Interesting information from this research is that 50 percent of the family population in rural Sumatra, Java, and Bali, only earns 23-26 percent of the total income in each village. In rural Sumatra, the total income of all household heads per month is around IDR 488.4 million, while in rural Java it is IDR 5.8 billion, and in rural Bali it is IDR 5.4 billion.

Then, the bottom 20 percent of the family groups (poorest) in the three islands only get 5-6 percent of the total income and the bottom 40 percent of the village residents only get 16-18 percent of the total income. In contrast, the top 20 percent of families (the richest) earn 55-58 percent of the total income.

In the context of the Covid-19 pandemic, the above data and information warn us that low inequality can at any time shift to moderate to high inequality. This can happen if regulations for handling socio-economic impacts caused by Covid 19 are not well-targeted and do not have a clear orientation. Indeed, the development of policies that prioritize poverty alleviation among low-income households who are vulnerable to weak economic situations is very important (Mustapa, Al Mamun, and Ibrahim 2018; Al Mamun et al. 2018). It's just that regarding assistance policies such as social assistance programs and the like in the future, caution needs to be taken.

One of the advantages of PVD is that it is able to show the position of inequality and the quality of life of family groups in each hamlet/community unit or in other terms. In rural Sumatra, which has a plantation agriculture typology, the Gini ratio is highest at the hamlet level of 0.41 and the lowest is 0.36. Meanwhile, in rural areas of Java and Bali with the typology of food crops and rice fields, the Gini ratio was highest at the hamlet level of 0.44 (Java) and 0.40 (Bali), and the lowest was 0.31 (Java) and 0.29 (Bali). Of the two categories of the Gini ratio, there are patterns of poverty and unemployment as a result of the Covid-19 pandemic.

First, a high Gini ratio is followed by high poverty and unemployment. In all rural areas in Sumatra, Java, and Bali, the family population that contributes to the high Gini ratio in the hamlet/community unit level has a family poverty distribution of 1.6-6.46 percent and unemployment 0.68-4.08 percent of the total family. For poverty, rural Sumatra provides the highest contribution, which is 6.46 percent of the total family. It is then followed by rural Java and Bali, respectively as much as 2.45 percent (Java) and 1.64 percent (Bali) of the total family. As for unemployment, rural Bali has the smallest contribution (0.68 percent of total families), which is then followed by rural Java as much as 2.65 percent of the total family. Meanwhile, rural Sumatra contributed the highest, which was 4.08 of the total family.

Second, a low Gini ratio is followed by low poverty and unemployment. In rural Sumatra, Java, and Bali, the family population that contributes to the low Gini ratio at the hamlet level has a family poverty distribution of 1.2-4.76 percent and unemployment 0.96-2.13 percent of the total family. This pattern provides information that poverty in rural Sumatra is higher than rural Java and Bali, which is 4.76 percent of the total family. This is followed by rural Bali and Java, respectively 3.50 percent (Bali) and 1.25 percent (Java). As for unemployment, rural Java contributed the largest (2.13 percent of the total family). It is followed by rural Sumatra as much as 1.02 percent and rural Bali 0.96 percent.

Based on the research findings, the Covid-19 pandemic has warned policy makers to be precise in determining the priority targets of village development programs. In the context of Indonesia, the development mandate is based on the 1945 Constitution of the Republic of Indonesia, namely "to

improve the welfare of the people" and "to educate the nation". This mandate is a corridor in the post-Covid-19 pandemic policy. Therefore, poverty as a result of the Covid-19 pandemic can be reduced through various programs and policies that touch three main aspects: education, employment, and income (Figure 6).

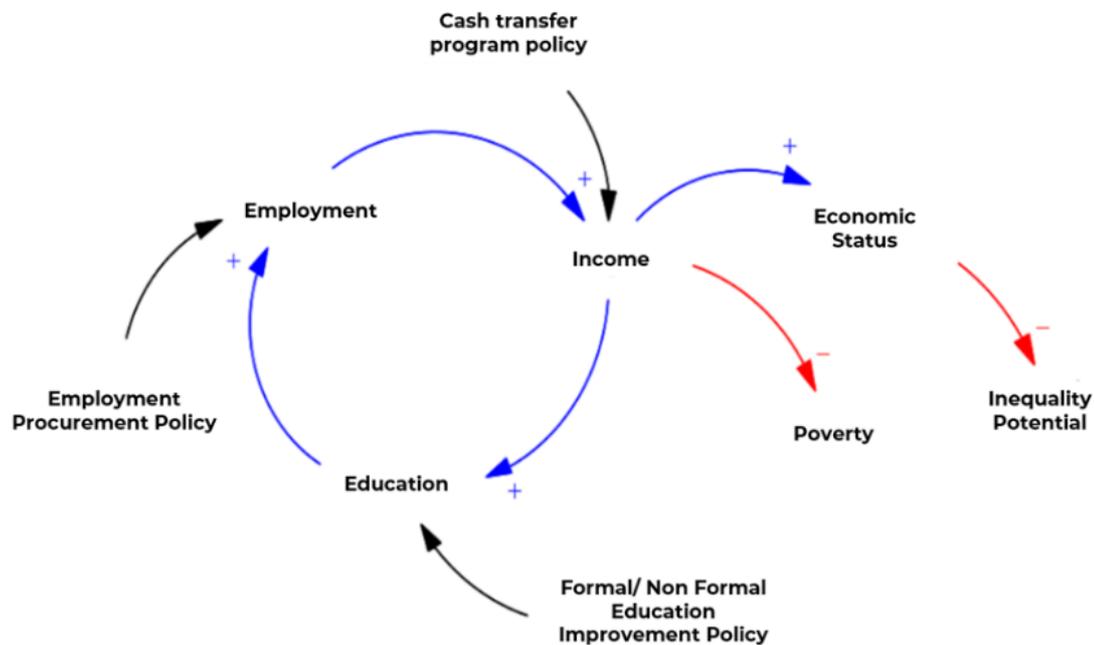


Figure 6. Recommendations for the post-Covid-19 development program cycle

Figure 6 shows that the post-Covid-19 development program forms an interrelated cycle of three main aspects (education, employment, and income). For example, the target of the program is to improve the quality of education, so the right target of the program is individuals who need assistance to increase their capacity and competence through formal/non-formal education. This capacity building and self-competence aims to increase their competitiveness and readiness to enter the world of work and entrepreneurship after Covid-19. By itself decent work will increase income, and affect the increase in status/economic conditions. Improving the economic status and purchasing power of each individual will lift poor families out of poverty and narrow the gap in inequality that exists in the village or region.

Another example, if the increase in income is targeted at individuals who do not yet have decent jobs, then providing local potential-based employment that is networked with industry as an offtaker is a more appropriate approach. Of course, the solidarity of rural community groups also enables individuals to more effectively utilize their various knowledge, skills and resources to maintain their communities in a more sustainable manner and provide greater participatory space for the community. (Leap and Thompson 2018; Gouveia, Forte, and Coelho 2021; Balaban, Župljanin, and Nešović 2019; Antic et al. 2017; Gema Cárdenas Alonso and Ana Nieto Masot 2017).

The advantages of PVD, which are able to capture inequality and the quality of life of family groups, can be used as a way out to overcome the problems of poverty, inequality, food crises, and unemployment in rural areas. The advantages of PVD do not only apply to the three research locations in Indonesia. But also, it can capture nationally, as well as globally. During the Covid-19 pandemic, not only Indonesia had difficulty identifying families and distributing social assistance to the community. South African countries, Spain, America are experiencing the same thing and even social assistance encourages social inequality (Atutxa et al., 2021; Mueller et al., 2021; Visagie & Turok, 2021). The impact of this pandemic was also stated by Acuto et al. (2020) that the pandemic is driving an increase in fundamental inequalities within society, not just the family level. In addition, inequalities are also found to be spatially and geographically consequential between rural and urban areas (Harris et al., 2020). The description of the disparity in spatial and geographical consequences can be presented in the PVD.

CONCLUSION

This research has succeeded in identifying inequality and poverty in rural Indonesia caused by the Covid-19 pandemic. By taking a study in three research locations that represent villages in Indonesia (Sumatra, Java and Bali), low inequality was identified (Sibandang Village with the typology of plantation village = 0.39; Cikarawang Village with the typology of food crops village = 0.36; and Tegallalang Village with rice field village typology = 0.35).

From the results of the Gini ratio measurement, it is found that 20 percent of the family population in the village only gets 5-6 percent of the total income of the entire population. Then, the next 20 percent (total 40 percent) of the family population in the village, only get 16-18 percent of the total income of the entire population. They are then categorized as poor people in the area. Furthermore, 50 percent of the family population (half of the total population), in rural Sumatra, Java, and Bali, only get 23-26 percent of the total income in each village.

The income inequality above emphasizes that every poor family in rural Indonesia has a different income in each village. Thus, poverty is relatively in accordance with the context of the social structure, economy, and rural ecology. Gini ratio measurements carried out can provide recommendations for policy makers related to social security programs, empowering poor families in order to improve the welfare of poor families in rural areas after the Covid-19 pandemic. This study recommends that the policy for the recovery of poor families in rural Indonesia after the Covid-19 pandemic must touch three main aspects, that is education, employment and income.

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