

Socio-Economic Analysis of Disaster Recovery Index in Donggala Regency

Patta Tope^{1*}, Mohamad Ichwan², Eko Jokolelono³, Nudiatulhuda Mangun⁴, Haerul Anam⁵

^{1,2,3,4,5}Universitas Tadulako, Indonesia

patta.tope@gmail.com*, mitandju@yahoo.com, Jokolelono.eko@yahoo.com, inunmangun@gmail.com, chaerul.anam30@gmail.com

Abstract

The territory of Indonesia consists of an archipelago located in the pacific ring of fire. Under the waters of Indonesia, there is a collision of three large tectonic plates, namely the Eurasian Plate, Indo-Australian Plate, and the Pacific Plate which has and can cause volcanic explosions and earthquakes that are the deadliest in human history. The purpose of this research is to discuss about socio-economic analysis of disaster recovery index in Donggala Regency. Analysis of the problem in this study using the Indonesia Post-Disaster Recovery Index (Ina-PDRI). From the results of the study, it is found that disaster recovery index in Donggala Regency is 87.02 percent. This finding shows that socio-economic conditions in Donggala Regency are still better before natural disaster occurred by 12.98 percent compared to current conditions. This figure is obtained from the weighted average of disaster recovery index in the education sector which only reached 69.57 percent, disaster recovery index in the health sector which only reached 79.76 percent, and disaster recovery index in the economic sector which only reached 118.8 percent.

Keywords

socio-economic; education; health; economic



I. Introduction

The territory of Indonesia consists of an archipelago located in the pacific ring of fire. Under the waters of Indonesia, there is a collision of three large tectonic plates, namely the Eurasian Plate, Indo-Australian Plate, and the Pacific Plate which has and can cause volcanic explosions and earthquakes that are the deadliest in human history. This geographical situation has made Indonesia very vulnerable to natural disasters (Aidi and Farida, 2020; Faris et al., 2019).

With a population of 274 million in 2022, the risks faced by Indonesia are very large (Fahlevi et al., 2019; Pertiwi et al., 2020). Many natural disasters have befallen Indonesia, causing many casualties and property losses. Major natural disasters that have occurred in Indonesia are earthquakes, tsunamis and liquefaction in Palu City, Sigi Regency, Donggala Regency, and Parigi Moutong Regency in 2018 which have claimed more than four thousand lives and caused enormous property losses (Rajindra et al., 2019; Hansun, 2020).

Natural disasters that occur in Central Sulawesi Province are a series of events that threaten and disrupt people's lives and livelihoods caused, both by natural factors and/or non-natural factors as well as human factors, resulting in human casualties, environmental damage, loss of property and psychological impact (Badan Nasional Penanggulangan Bencana, 2013). Events that occur in Donggala Regency caused by nature such as

earthquakes and liquefaction are included in the category of natural disasters. If this incident occurs in an uninhabited area and/or there are no facilities and infrastructure, then the event/event is only called an ordinary natural phenomenon.

The natural disaster that occurred in Donggala Regency, Central Sulawesi Province resulted in the disruption of people's lives as well as the destruction of the environmental order, thus requiring an effort to restore normalcy. Recovery is a series of activities to restore the condition of the community and the environment affected by the disaster by re-functioning institutions, infrastructure and facilities by carrying out rehabilitation. The length of processing time and the amount of costs required to restore the condition of the community and the environment depend on the magnitude of the impact of the natural disaster on the socio-economic life and the environment in the community. The greater the impact arising from a disaster, the longer the time and cost required in the recovery process.

The disaster recovery in Donggala Regency has been carried out in the form of rehabilitation and reconstruction activities (Anitha, 2020) which is still being carried out. To measure the rate of recovery after rehabilitation and reconstruction, a general measure is needed in the form of an index number. This index is called the Indonesia Post-Disaster Recovery Index (Ina-PDRI).

The level of post-disaster recovery has been achieved from the rehabilitation and reconstruction that has been carried out by various parties in Donggala Regency, both from the economic aspect, as well as from the social aspect (education and health). The urgency of this study is to measure the condition of the recovery of people's lives in the pre-disaster and post-disaster situations as well as provide a benchmark for monitoring and evaluating the results of post-disaster rehabilitation and reconstruction and can provide information for decision making by both the government and other stakeholders related to disasters. In addition, this study can also provide input on the level of adequacy of recovery, thereby assisting stakeholder parties in post-disaster recovery and for re-adjusting the determination of the implementation period for post-disaster rehabilitation and reconstruction in order to accelerate recovery and provide information to the government, especially BNPB and other parties to develop analysis of disaster-related factors.

The purpose of this research is to discuss about socio-economic analysis of disaster recovery index in Donggala Regency.

II. Research Method

The research method is defined as a scientific way to obtain data with specific purposes and uses (Asyraini et al., 2022; Octiva, 2018; Pandiangan, 2015). The scientific way means that research activities are based on scientific characteristics, namely rational, empirical, and systematic (Jibril et al., 2022; Pandiangan et al., 2018; Pandiangan, 2022).

Analysis of the problem in this study using the Indonesia Post-Disaster Recovery Index (Ina-PDRI). The index is an ordinal measure that is arranged in such a way that it can sort respondents in a more precise order according to certain variables (Octiva et al., 2021; Pandiangan et al., 2021; Pandia et al., 2018). In order to obtain a more complete and precise measure, the size of a variable is not solely based on one question, but on several questions (Octiva et al., 2018; Pandiangan, 2018). In most social studies, researchers have not paid serious enough attention to measurement instruments. For this reason, poor indices and unreliable research results are often found (Pandiangan et al., 2022; Tobing et al., 2018).

III. Discussion

3.1 Results

This research was conducted in Donggala Regency, Central Sulawesi Province. Based on the results of interviews with the Donggala Regency Government, there are three sub-districts that are heavily affected by the disaster. Therefore, this research is directed to these three districts. The three sub-districts are Banawa District, Tanantovea District, and Sindue District. The survey was carried out to all villages and sub-districts in the three sub-districts. The development of educational facilities and health facilities as well as changes in the turnover of each business actor after a natural disaster are as follows:

a. Education Sector

The 7.4 richter scale earthquake with a depth of 10 kilometers in Donggala Regency, Central Sulawesi Province, which was followed by a tsunami and liquefaction in Donggala Regency on September 28, 2018 has damaged educational infrastructure. Damage and loss to educational facilities in the three most affected sub-districts resulted in a decline in productivity in the education sector. Basic educational facilities that suffered heavy damage, moderate damage or minor damage can be seen in the following Figure 1:

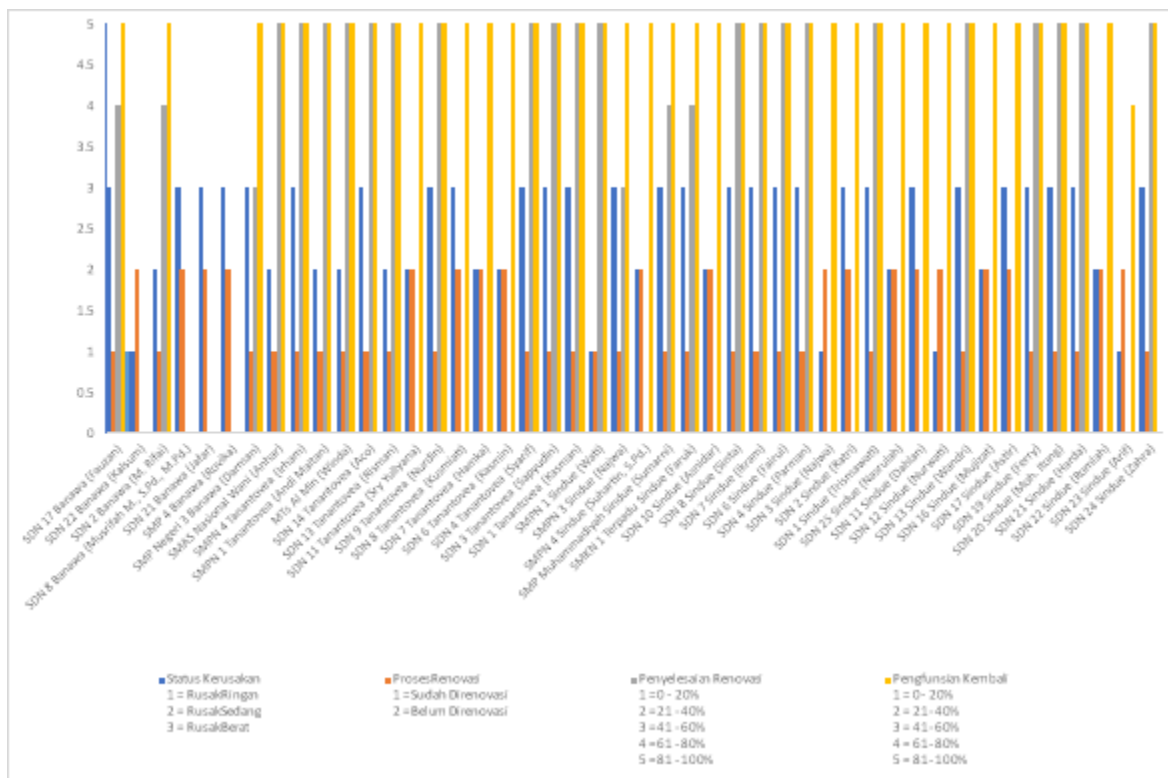


Figure 1. Damage to the Education Sector in Donggala Regency

The 66 schools that became the object of research in three sub-districts, 46 schools were damaged and only 20 schools were not damaged by natural disasters. The total 46 schools damaged by natural disasters, 28 were heavily damaged, 13 were moderately damaged, and 5 were lightly damaged. To date, 27 schools have been renovated and 19 schools have not been renovated.

The 27 school buildings that have been renovated, 2 schools with a renovation rate of 41-60 percent, 4 schools with a renovation rate of 61-80 percent, and 21 schools with a renovation rate of 80-100 percent. There are 4 school buildings that have not been used due to

the earthquake. Meanwhile, the level of re-utilization/utilization is 1 school building that has only functioned 61-80 percent and 41 schools that have functioned 80-100 percent.

b. Health Sector

The natural disaster that hit Donggala Regency not only damaged educational facilities, but also caused the destruction of various health facilities. Basic health facilities that suffered heavy damage, moderate damage, and minor damage can be seen in the following Figure 2:

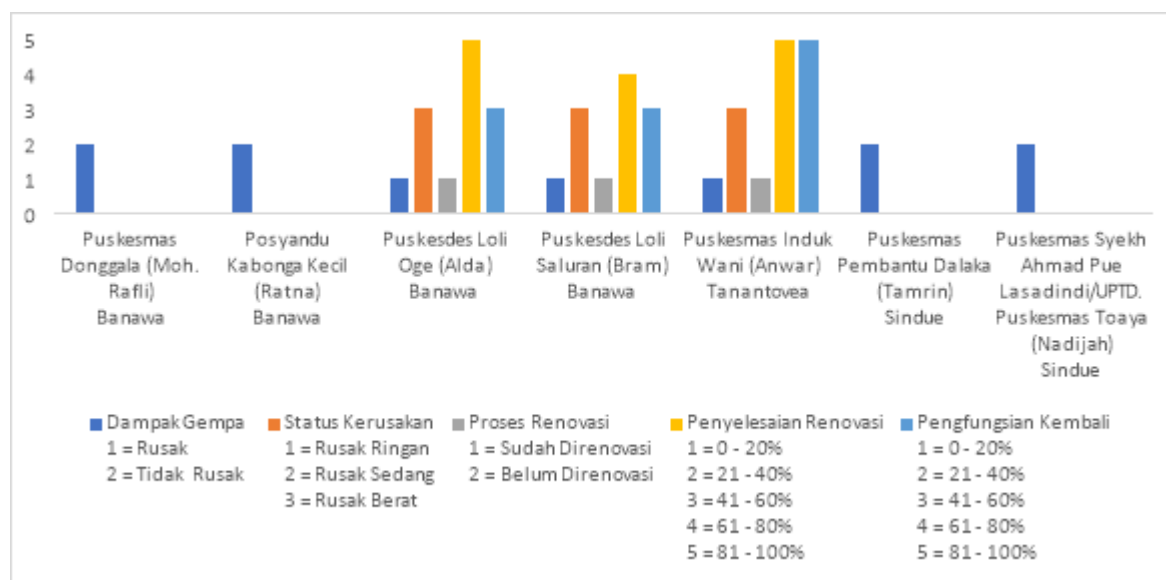


Figure 2. Damage to the Health Sector in Donggala Regency

There are seven health facilities included in the sample area. Of the seven health facilities, there are 4 health facilities that were not damaged during the disaster, namely Donggala Public Health Center, Kabonga Kecil Integrated Service Post, Dalaka Assistant Public Health Center, Sheikh Ahmad Pue Lasadindi Public Health Center/Service Technical Implementation Unit, and Toaya Public Health Center. Meanwhile, three others were damaged. Three health facilities were damaged, namely Loli Oge Village Health Center, Loli Saluran Village Health Center, and Induk Wani Public Health Center. The three health facilities were heavily damaged. However, all three health facilities have been renovated. Loli Saluran Village Health Center has a renovation rate of 61-80 percent, while Loli Oge Village Health Center, and Induk Wani Public Health Center have reached 80-100 percent. In terms of function, Loli Oge Village Health Center and Loli Saluran Village Health Center have only functioned around 41-60 percent, while Induk Wani Public Health Center has returned to functioning at 80-100 percent.

c. Economic Sector

One of the direct impacts of the earthquake that occurred in Donggala Regency, Central Sulawesi Province was economic losses. Economic losses can be seen from the destruction of the business sector. Losses from the economic sector in general can be seen from the decline in the turnover of economic actors, because all the activities of the affected communities experience total paralysis. The turnover of business actors prior to the disaster was still running normally because it was supported by normal production, distribution and consumption activities. After four years of the disaster, the turnover conditions for micro, small and medium and large businesses can be seen in the following Figure 3:

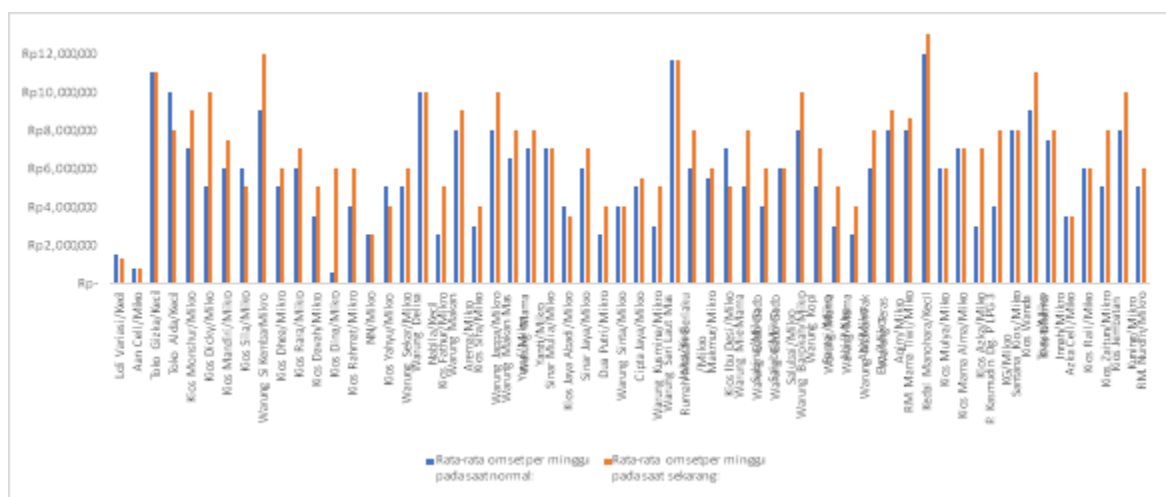


Figure 3. Turnover of Economic Actors in Donggala Regency

There are 58 business actors in three sub-districts that are sampled in this study. In general, there has been an increase in the turnover of business actors in Donggala Regency after the natural disaster in 2018. The total turnover of micro, small, business actors before the disaster was Rp333.950.000 per week, while their current turnover is Rp400,800,000 per week. Based on these results, it is illustrated that from the side of business actors in general, economic conditions have returned to normal. Economic activities in the form of production, consumption and distribution are already running as before the earthquake.

Of the 58 respondents interviewed, there are 39 business actors whose current turnover is higher than before the natural disaster. There are 13 respondents whose current turnover is the same as before the disaster and there are as many as six business actors whose current turnover is lower than before the disaster occurred. The turnover development process for micro and small business actors is quite slow. This indicates that extra attention is needed from various parties to business actors, especially micro and small business actors in Donggala Regency.

3.2 Discussion

The natural disaster that occurred in Palu City, Donggala Regency which occurred on September 28, 2018 was so severe. Disaster recovery index in Donggala Regency is 87.02 percent. The results of these calculations indicate that the level of post-disaster life recovery at the time the survey was carried out had not run as well as before the disaster. Socio-economic conditions are considered to be running normally if the value of the post-disaster recovery index has reached 100 percent. Socio-economic conditions in Donggala Regency are still better before natural disaster occurred by 12.98 percent compared to current conditions. The post-disaster recovery index value is a composite index that combines indicators of education, health, and economic indicators as a comparison tool for efforts to recover post-disaster socioeconomic conditions in Donggala Regency. The post-disaster recovery index value is a balanced average of the post-disaster recovery index scores for education, health, and economic these conditions can be seen in the following Figure 4:

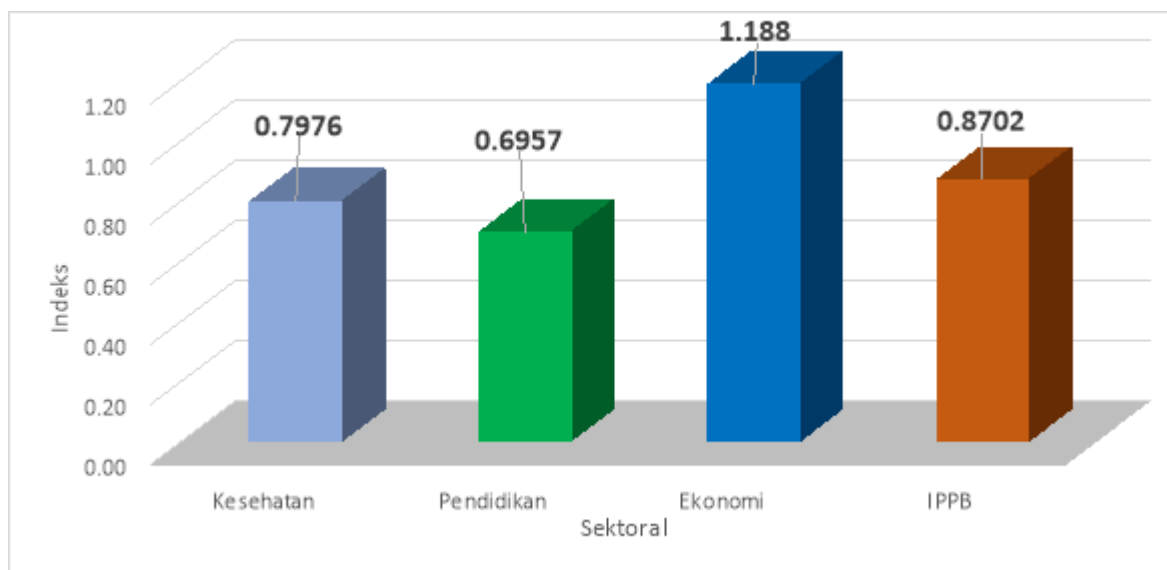


Figure 4. Donggala District Disaster Recovery Index Value

a. Recovery in the Education Sector

Efforts to restore conditions in the education sector can be seen in the value of the post-disaster recovery index in the education sector. The weighted average of disaster recovery index in the education sector which only reached 69.57 percent. These results are the weighted average value of the education post-disaster recovery index value at the elementary school level of 90.69 percent, the education post-disaster recovery index value at the junior high school level of 60.68 percent, and the education post-disaster recovery index value at the senior high school level of 61.17 percent. This indicates that the impact of the disaster on the education sector in Donggala Regency is still being felt today. This condition makes it clear that the education sector in Donggala Regency is currently still behind by 30.43 percent (100-69.57) percent compared to the time before the natural disaster occurred. This means that until the time this survey was conducted in mid-2022, the condition of education in Donggala Regency had not been running normally. The low value of the post-disaster recovery index in the education sector in Donggala Regency is caused by the large number of schools damaged by the earthquake. Some of the damaged school buildings have not yet been completely renovated, so the school building cannot be used for student learning.

b. Recovery in the Health Sector

The efforts of the parties to restore health conditions in Donggala Regency can be seen from the value of the post-disaster health recovery index. Disaster recovery index in the health sector which only reached 79.76 percent. This indicates that the impact of the disaster on the health sector in Donggala Regency is still being felt. The current condition of the Health sector in Donggala Regency is still 20.24 percent (100-79.76) percent behind compared to the time before the natural disaster. This means that until this survey was conducted in mid-2022, the condition of the health sector in Donggala Regency had not been running normally. The low index of disaster recovery in the Health sector in Donggala Regency is caused by the number of damaged health facility buildings. There are still damaged health buildings that have not been renovated so that these buildings cannot be used normally for public health services.

c. Recovery in the Economic Sector

Disaster recovery index in the economic sector which only reached 118.8 percent. This indicates that the current economic condition is better than when the disaster occurred. This means that the current economic situation is 18.80 percent better than before the natural disaster. The high value of the post-disaster recovery index in the economic sector in Donggala Regency is because the turnover of business actors has increased from the previous condition. The total turnover of business actors at the survey location in a week has increased from Rp339,950,000 (before the disaster) to Rp400,800,000 (at the time of the survey).

IV. Conclusion

From the results of the study, it is found that disaster recovery index in Donggala Regency is 87.02 percent. This finding shows that socio-economic conditions in Donggala Regency are still better before natural disaster occurred by 12.98 percent compared to current conditions. This figure is obtained from the weighted average of disaster recovery index in the education sector which only reached 69.57 percent, disaster recovery index in the health sector which only reached 79.76 percent, and disaster recovery index in the economic sector which only reached 118.8 percent.

In order to improve the post-disaster socio-economic conditions, suggestions are deemed necessary to accelerate the rehabilitation and reconstruction of infrastructure in the Education and Health sector, where the post-disaster recovery index value is still low. Rehabilitation and reconstruction are very important so that these educational and health facilities can be utilized for the benefit of the teaching and learning process as well as public health services in Donggala Regency.

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