

Overview of Socio-economic Indicators in Area Affected the 2004 Aceh Tsunami Post-Humanitarian Assistance: A Review of Increasing Economic Growth Towards Sustainable Environmental Development

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ABSTRACT

This study aimed to analyze the overview of the impact of socio-economic indicators and the economy of areas exposed to the 2004 Aceh tsunami in the South-western region of Aceh Province, namely West Aceh district, Simeulue district, Nagan Raya district and Aceh Jaya district after five years humanitarian assistance on economic growth towards sustainable environmental development. The study used secondary data with panel data that was collected from Central Bureau of Statistics of Aceh Province and Bank Indonesia of Banda Aceh branch, each of which was obtained over a period of 13 years from 2010 to 2022. While multiple linear regression is employed as a quantitative method for data analysis. The study findings that indicate that indicator of socio, the poverty has a significant effect on economic growth each with a value 0,0782 with significance level of $\alpha = 10\%$. Meanwhile, the economic indicator, namely inflation, haven't a statistically significant impact of 0.6517 on economic growth at a significance level of $\alpha = 5\%$ or $\alpha = 10\%$. The equation of this model is obtained $EG = 0,6797 + 3,3654LnTP - 0,0365INF + \varepsilon$. Next, the correlation coefficient is 0.0652 and determination coefficient is 0,0271, with value of t_{test} 1,798836 for total poverty and 0,454205 for inflation as well as F_{test} value is 1,709245. However, after the 2004 Aceh earthquake and tsunami disaster, poverty rates have been reduced, but only in the medium term (5-6 years) and currently the condition of the poor population is almost continuously improving. It's recommended that the regional and Acehnese and central governments recommend various social programs to overcome poverty and also in terms of population. The long-term impact is economic growth continues to rise and facilitates the process of developing a sustainable environment so that it will be better in the future.

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1. INTRODUCTION

In the past two decades, the world has witnessed an increase in the number of natural disasters and man-made disasters, including tsunamis [1,2]. The earthquake disaster accompanied by tsunami waves on December 26, 2004, which struck the Indian Ocean, was one of the deadliest earthquakes in history. It was a magnitude 9.0 Richter scale earthquake that occurred in the Indian Ocean's Ring of Fire [3] or a 9.3 Moment magnitude (Mw) earthquake with a rupture length of 1200 km, triggering tsunami waves as high as 30 meters. This event resulted in a minimum of 230,000 casualties across 15 countries in Africa and Asia, including Indonesia [4]. Subsequent landslides into the water can generate a large and perilous tsunami, posing a threat to coastal areas

[5]. The most severe impacts occurred in Indonesia, particularly in the provinces located along the Indian Ocean coast, including Aceh Province, resulting in significant casualties and displacements [6]. This had consequences that exceeded the capacity of the Indonesian government to address the disaster, leading the government to open up to international humanitarian assistance for Aceh [7] and humanitarian aid is not seen to have long-term positive effects in Asia [8].

One of the social indicators is poverty, where an indicator in communal life is measured by home ownership, which is identified with a person's social status to move out of the poverty category. This is not an easy matter, considering the rising sea levels have necessitated the relocation of certain areas involved in housing development. On the other hand, the increasing population and varied desires of earthquake and tsunami victims, with some wanting to return and reside in their original areas [9], have created persistent challenges in housing development policy for policymakers and donor.

This humanitarian aid totaling US\$ 6.1 billion is the largest assistance ever received by the Aceh government in Indonesia [10], that used to support the implementation of disaster relief efforts in Aceh and Nias [11] had the objective at minimizing vulnerability and rebuilding various facilities and infrastructure damaged by the Indian Ocean tsunami and earthquake, as this disaster had catastrophic consequences.[12], but Acehnese people say thanks with '*Aceh Thank The World*' in the form of 53 plaques along the sides of Blang Padang Field in Banda Aceh city [13]. The estimated damages it caused until the year 2008 can be seen in Figure 1.

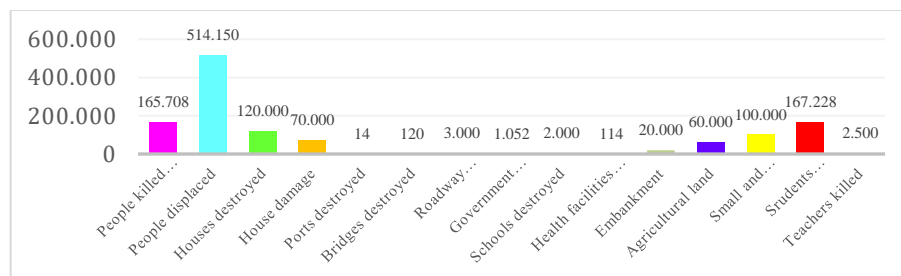


Figure 1. Damage Caused by Earthquake and Tsunami Aceh in December 2004
Source: The Executing Agency of Rehabilitation and Reconstruction for Aceh and Nias, 2009.

Throughout the late 2004-2005 period, the refugee influx had the most significant impact in this disaster, reaching 154,150 individuals and resulting in 165,708 civilian casualties, including over 2,500 teachers. Furthermore, there were 120,000 houses damaged and 70,000 destroyed. Additionally, 1,052 government buildings were damaged, and over 2,000 schools were damaged or destroyed. Similarly, 114 healthcare centers were affected, and 3,000 kilometers of roads and 120 bridges were damaged. The situation was exacerbated by damage to livelihoods, including agricultural land, fishponds, and small and medium-sized businesses that were also destroyed due to the Indian Ocean tsunami and earthquake.

International humanitarian aid, in general, has brought about many positive changes to the lives of disaster-affected victims in Aceh Province, especially in the southwestern region of this province, which consists of 8 districts/cities, with 4 of them being the hardest-hit by the Indian Ocean tsunami and earthquake. However, it is not impossible that there may also be negative impacts. This is reflected in the poverty rate in this area can be seen in Figure 2.

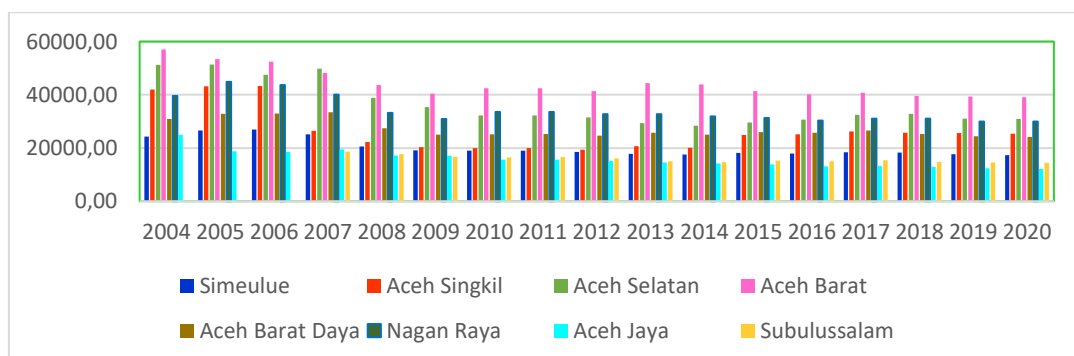


Figure 2. Number of Poor People in The South-West Region of Aceh Province in 2004-2023
Source: Central Bureau of Statistics of Aceh Province (2022).

Based on figure 2 above, in general, the poverty rate in the southwestern region of Aceh, especially in the 4 hardest-hit districts by the tsunami, has tended to decrease over the 6 years following the tsunami. This is understandable, given the various humanitarian aid efforts, especially in various economic recovery areas such as livelihood programs, which have led to a continuously growing economy. However, 6 years after the tsunami, precisely in 2010, the poverty rate continued to fluctuate and showed a tendency to increase back to the levels seen in 2004.

Furthermore, the positive impact of social and economic development [9] has further improved the well-being of the Aceh population through social transformation [14], both in the aftermath of prolonged conflict [15] and after the Indian Ocean tsunami and earthquake. This has brought prosperity to the people in this province. Furthermore, to expedite post-disaster recovery, there is a need for social capital as the core of the planning process, which plays a crucial role in rebuilding earthquake-affected areas [16]. This is further emphasized by [17], who categorize the dimensions of social capital, including the influence of spirituality and culture, which still remains an important social capital in developing countries, as in the case of Indonesia.

World Bank (2023) categories that socio indicator consist of a). poverty, that head count of ratio at \$2.15 a day, b). life expectancy at birth, c). total population, d). population growth, e). net migration and f). human capital index. Meanwhile, economic indicator includes Gross Domestic Product (GDP), GDP percapita, GDP growth, unemployment, inflation and personal remittances. Based on the explanation above, the socio indicator that use in this research poverty and inflation for economic indicator.

In general, high and low levels of economic growth in developing countries influenced by agriculture sector. Then, farming sector have impact on economic growth and possible to reducing poverty rates in South Africa [18]. According to Mankiw (2005: 13) further states that economic growth is an important indicator to see the successful of economic development in a country in addition to other indicators such as unemployment rates, poverty rates, inflation rates, and so forth. Rapid and stable economic growth is expected to have a positive impact both directly and indirectly on other economic variables in the world.

Based on the theory explanation above, it can be explained that economic growth is an increase in output in the long run, or an increase in the production of goods and services. and it's an important indicator. The research problem in this study is how overview the impact of socio-economic indicators of areas exposed to the 2004 Aceh tsunami in the South-west region (West Aceh District, Simeulue District, Nagan Raya District and Aceh Jaya District) of Aceh Province after five years humanitarian assistance on economic growth towards sustainable environmental development?

2. RELATED WORKS

The research is relevant with the results of [19] that highlights a further issue the heterogeneous effects of foreign aid on growth across less developed countries. Developing countries differ in their stages of development, per capita income, socio-economic, financial, and political characteristics. For this reason, the World Bank (2012) broadly classifies the developing countries into two categories: low income developing countries (LIDCs) and high-income developing countries (HIDCs) based on per capita income and also find that higher unemployment rates, higher inflation, and higher levels of corruption reduce economic growth in both LIDCs and HIDCs.

Furthermore, the research from [9] which is the humanitarian sector tends to favour rebuilding in-place to avoid the social disruptions of mass relocation, yet evidence on what affected people want is mixed. Using the case of post-tsunami Banda Aceh, Indonesia, that investigate whether a policy to rebuild in-place in the disaster-affected area suits an urban population that was previously unaware of the hazard. This has caused a new price premium for inland properties and socio-economic sorting of poorer households into coastal areas. These findings show that offering reconstruction aid predominantly within a hazard-exposed area can inadvertently transfer disaster risk to the poor.

Finally, from [18] claimed that the agricultural sector is important in South Africa because it contributes approximately 2.53 percent to the country's Gross Domestic Product. Agriculture can contribute significantly to economic growth, by means of food production and job creation and thereby it can play an important role in reducing poverty. This study examines the impact of farming on economic growth and the possible role it plays in poverty alleviation in South Africa. Results showed that variables where cointegrated meaning there was a long run relationship between the dependent variable GDP and the independent variables comprising of consumer price index, consumption, inflation, and unemployment used as proxies in understanding how farming affects economic growth and ultimately consumer well-being, like province of Aceh as an agricultural region.

3. METHODS

There were 6 districts/city that were worst hit by earthquake and tsunami in South-west region of Aceh Province, which consists 8 districts/city. This are consisting of South Aceh District, Subulussalam City, Aceh Barat Daya District, Aceh Singkil District, West Aceh District, Simeulue District, Nagan Raya District and Aceh Jaya District) where 6 districts were hit by earthquake and tsunami and 4 districts (West Aceh District, Simeulue District, Nagan Raya District and Aceh Jaya District) with the worst area of damage. This is the reason for choosing the research object in the south-west region in this province.

3.1 Scope of Research

The scope of this study includes total poverty, inflation and economic growth of Aceh Province in 2010-2022, that sourced from Central Bureau of Statistics of Aceh Province and Bank Indonesia branch of Banda Aceh. The election range for 2010-2022 it's assumed that after five years have passed, tsunami victims' communities will be return to normal condition.

3.2 Model Analysis of Data

The data analysis model used is quantitative analysis by using multiple linear regression.

3.2.1. Classic Assumption Test

Classic assumption test can be detected using normality test, multicollinearity test, heteroscedasticity test and autocorrelation test.

3.2.2 Multiple Linear Regression Analysis (Semi Logarithm)

Gujarati and Porter (2010 : 245), describe that the multiple linear regression equation as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_n X_n + \varepsilon \quad (1)$$

Where Y is dependent variable, β_0 is intercept (constant), β_1 as regression coefficient of X_1 factor, β_2 as regression coefficient of X_2 factor, X_1 is independent variable 1, X_2 is independent variable 2 and ε as error term.

Furthermore equation (1) to be equation (2) on semi-log model (log-lin)

$$Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 X_2 + \beta_n X_n + \varepsilon \quad (2)$$

Subsequently, Y is economic growth, β_0 is intercept (constant), β_1 as regression coefficient of X_1 factor, β_2 as regression coefficient of X_2 factor, X_1 is total poverty in persons, X_2 is inflation and ε as error term. Then equation (2) to be equation (3) with the symbol

$$EG = \beta_0 + \beta_1 \ln TP + \beta_2 INF + \beta_n X_n + \varepsilon \quad (3)$$

Where EG is economic growth, β_0 is intercept (constant), β_1 as regression coefficient of X_1 factor, β_2 as regression coefficient of X_2 factor, TP is total poverty in persons, INF is inflation and ε as error term and the test criteria are carried out by t test and F test.

4. RESULTS AND DISCUSSION

4.1 Economic Growth

However, natural disasters have had a positive economic impact, contributing to the economic recovery. Economic growth rate is one of the indicators used to measure the prosperity of a nation/region, and in this case, in the post-tsunami conditions, it can be illustrated in Figure 3.



Figure 3. Economic Growth of Indonesia and Aceh Province Post Eathquake and Tsunami (%) in 2004-2023

Source: Central Bureau of Statistics of Aceh Province (2023).

The economic growth of Aceh Province was already low before the Indian Ocean tsunami and earthquake, averaging above 1% due to the prolonged conflict. In 2004, its growth rate was 1.76% during earthquake/tsunami and continued to decline in 2005, reaching 1.22%. This was still far below the national average growth rate, which was 5.13% in 2004 and increased to 5.6% in 2005. However, in 2006-2007, it

surged to 7.70% and 7.23%, surpassing Indonesia's economic growth rate of 5.5% and 6.9% in the same period. This was a result of the recovery phase during the rehabilitation and reconstruction period, which involved infrastructure development, especially public infrastructure, leading to a significant circulation of money in the province. In the last three years, the growth has been relatively low due to the impact of Covid-19. Next, the economic growth figure for four districts in Figure 4.

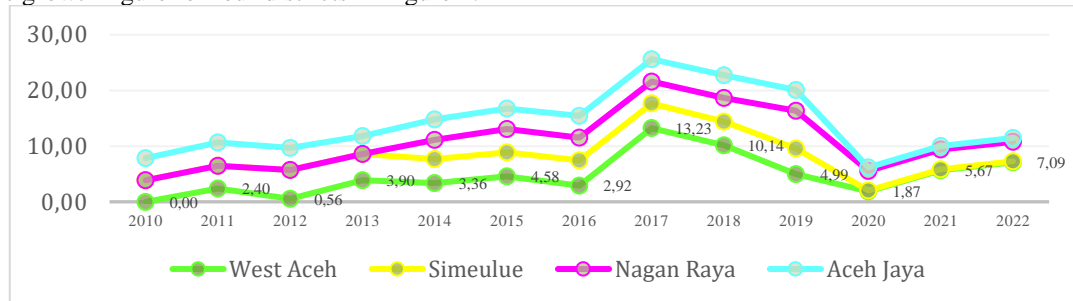


Figure 4. Economic Growth in Four Affected Districts in South-west Region of Aceh Province
(%) in 2010-2022

Since 2010 onwards, exactly five years of disaster have passed, which is a relatively normal situation for humanitarian assistance in all districts, which have continued to increase in economic growth. Next, Economic growth is peak in 2017 at 13,23%. Then, it will decline slowly until 2019 and drop in 2020 as a result of Covid-19 pandemic.

4.2 Poverty

Economic recovery provided by NGOs, in general, with livelihood programs or restoring family livelihoods has brought an increase in individual level income or family income for Acehnese communities. The programs can reduce unemployment and poverty in exposed area of earthquake and tsunami. The poverty rates in the four district exposed above can be seen in Figure 5.

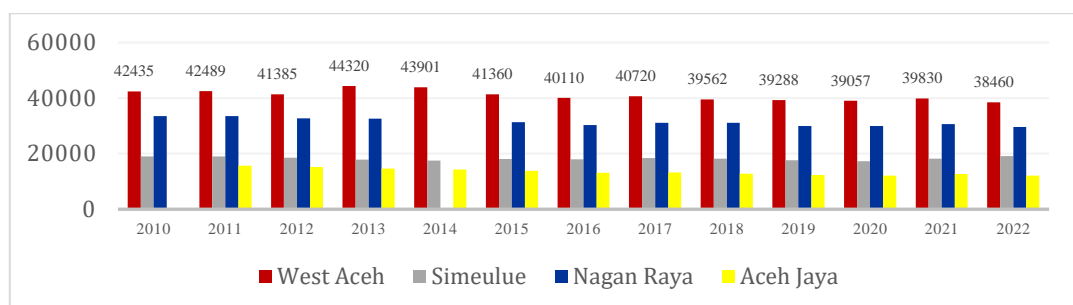


Figure 5. Poverty Rates in Four Tsunami Affected District in The South-west Region of Aceh Province 2010-2022

Source: Analyzed Data (November 2023)

Figure 5 describes the poverty rate in the four district in South-west region of Aceh Province, where the highest poverty occurs in West Aceh District. In fact, the district whose capital is Meulaboh is the trade centre of the eight district in the Barsela area. However, it is expansion that makes this city lag far behind its hinterland region. Meanwhile, the poverty rate continues to decrease with the transfer of the status of three universities from private to public (University of Teuku Umar, STAI Tgk Di Rundeng and State Community Academy/ *Akademi Komunitas Negeri*), so that the city automatically becomes the educational centre of the South-west region.

4.3 Inflation

Furthermore, [9] proposed that livelihood assistance packages can help individuals rebuild their livelihoods by either continuing their existing businesses or starting new ones, ultimately enhancing livelihood resilience [20]. This is also influenced by inflation, as illustrated in Figure 6, which depicts the inflation rate as one of the economic indicators.

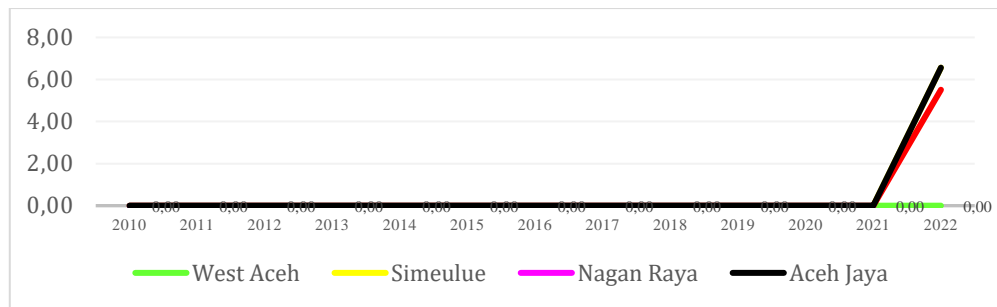


Figure 6. Inflation Rates in Four Tsunami Affected District in The South-west Region of Aceh Province 2010-2022

Source: Analyzed Data (November 2023).

Figure 6 depict that the inflation rate as an economic indicator, where the inflation rate in the four district has the same average, except in the last year which jumped drastically, reaching 5,5% for Nagan Raya District and 6,56% for West Aceh District, Simeulue District and Aceh Jaya District.

4.4 Analysis of Coefficient Correlation and Determination

Coefficient of correlation (R) of 0.65215 means that there is a moderate relationship between total poverty in people and inflatin in percent on economic growth in the South-west Region of Aceh Province especially in West Aceh District, Simeulue District, Nagan Raya District and Aceh Jaya District. Then, the value of determination coefficient (R_{adjusted}) is 0.027061, which means that 2,7 percent of economic growth is influenced by total poverty and inflatin and the remaining 92,3 percent is contributed by other variables outside the model.

Based on the Chow Test, Hausman Test, and LM Test, the selected model is CEM. Since CEM is chosen, classic assumption tests are conducted. The classic assumption tests used are multicollinearity and heteroskedasticity tests [21].

4.5 Classic Assumption Test

a. Multicollinearity Test

To find out the occurrence of multi-tolerance or very high or very low correlation that occurs in the relationship between independent variables, it can be detected by looking at the value of coefficient of independent variable $< 0,05$.

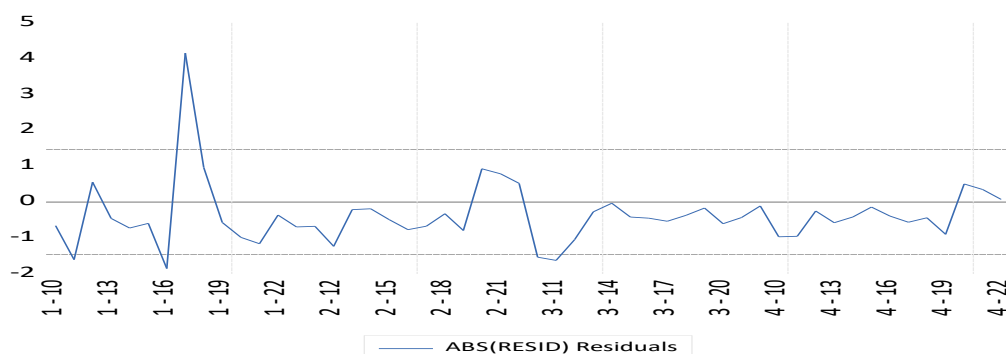
Table 1. Multicollinearity Test Results

No.	Variable	INF	TP
1.	INF	1.000000	0.014921
2.	Ln TP	0.014921	1.000000

Based on Table 1, it can be seen that the coefficients of total poverty and inflation are 0.014921, which is less than 0.05. Therefore, it can be concluded that there is no multicollinearity or it passes the multicollinearity test.

b. Heteroskedasticity

Heteroskedasticity is used to test whether in the regression model there is an inequality of variance from the residuals of an observation that is otherwise fixed, then it is called homoscedasticity, if different variances are called heterokedasticity that we can be seen in Figure 7 as residual plot.



Based on Figure 7, it can be observed that the residuals do not exceed the boundaries of 500 and -500, indicating consistent residual variance. Hence, there is no evidence of heteroskedasticity, and it passes the heteroskedasticity test [21].

4.6 Multiple Linear Regression Analysis

Table 2. Multiple Linear Regression Analysis

No.	Variable	Estimation Coefficient
1.	Constant	0.6797
2.	Total Poverty	3.3654
3.	Inflation	-0.0365

Based on Table 2, the regression equation is obtained as formulas of 5 & 6:

$$Y = 0,6797 + 3,3654L_nX_1 - 0,0365X_2 + \varepsilon \quad (5)$$

$$EG = 0,6797 + 3,3654L_nTP - 0,0365INF + \varepsilon \quad (6)$$

The linear multiple regression equation can be interpreted as follows: a). Constant: The constant value is 0.6797, means that if the total poverty, inflation and economic growth is equal to zero, then the constant value is 0.6797. b). L_nTP variable coefficient; The coefficient value is 3,3654, which means that if the total poverty increases by 1 percent, the economic growth will increase by 3,3654 percent and c). INF variable coefficient; The coefficient of -0,0365 means that if the inflation rises by 1percent then economic growth also decreases by 0,0365 percent. This means that if the inflation contributed less on economic growth in four districts in Aceh Province. Thus, happened because the data is short (13 years per district) and three of them are expending district in South-west Aceh Province.

4.7 Hypothesis Test (t Test and F Test)

The results of the t test on the total poverty variable obtained a calculated t of 1.798836 < t table, namely 2.008559 and a sig value. 0.0782 > 0.05, then H_a is rejected and H_o is accepted, meaning that the total poverty variable has no effect on economic growth at $\alpha=0,05$, but has effect at $\alpha=0,1$ on economic growth (0,0782).

Meanwhile, the results of the t test on the inflation variable obtained a calculated t of 0.454205 < t table, namely 2.008559 and a sig value. 0.6517 > 0.05, then H_a is rejected and H_o is accepted, meaning that the inflation variable has no effect on economic growth.

Finally, the calculated F value is 1.709245 < F table, namely 3.186582352 and the Sig value is 0.191617 > 0.05, then H_a is rejected and H_o is accepted, meaning that the variables total poverty and inflation have no effect on economic growth.

International humanitarian aid is often identified as a gift from other countries or foreign organizations, but it is not always the case that humanitarian disaster assistance is something to be embarrassed about for the recipients [13]. It is not uncommon for many humanitarian organizations to create logos or symbols.

Over time, from the emergency response phase to the conclusion of the rehabilitation and reconstruction program, the complexity of this aid has led to improvements in the well-being of the community. Although at times this is challenging due to significant disasters that also have a substantial impact on the agricultural labor market [22], Hence, the need for post-disaster recovery without international intervention that affects the socio-political dynamics and uneven outcomes of the Government of Aceh's Transformation Program [23].

Then, it so can be interpreted as follows:

- Total poverty did significantly impact on economic growth in the four district that exposed the earthquake and tsunami 2004 in Province of Aceh over the period 2010-2022.
- Inflation did not significantly impact on economic growth in the four district that exposed the earthquake and tsunami 2004 in Province of Aceh due to short secondary data, earthquake / tsunami disasters.

5. CONCLUSION

- The Government of Aceh Province and government of four district create the program to strengthen the capacity of tsunami victims to reduce poverty and inflation and increase economic growth.
- The hope is that the people of Aceh can rise towards a better life while still paying attention to environmentally sustainable development.
- Socio-economic indicators (total poverty and inflation) have impact only in medium term (five years) after earthquake and tsunami Aceh 2004 on economic growth, due to international humanitarian assistance but haven't affect in the long term.

- d. Sustainable environmental development in tsunami-affected areas can only be achieved if they strengthen social capital by working together to develop their regions and increase their human development index's.

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REFERENCES

- [1] Sawada, Y., Bhattacharyay, M., & Kotera, T. (2019). Aggregate impacts of natural and man-made disasters: A quantitative comparison. *International Journal of Development and Conflict*, 9(1).
- [2] Shimada, G. (2022). The impact of climate-change-related disasters on africa's economic growth, agriculture, and conflicts: Can humanitarian aid and food assistance offset the damage? *International Journal of Environmental Research and Public Health*, 19(1). <https://doi.org/10.3390/ijerph19010467>
- [3] Ahmadun, F. R., Wong, M. M. R., & Mat Said, A. (2020). Consequences of the 2004 Indian Ocean Tsunami in Malaysia. *Safety Science*, 121. <https://doi.org/10.1016/j.ssci.2019.05.016>
- [4] Suppasri, A., Goto, K., Muhari, A., Ranasinghe, P., Riyaz, M., Affan, M., Mas, E., Yasuda, M., & Imamura, F. (2015). A Decade After the 2004 Indian Ocean Tsunami: The Progress in Disaster Preparedness and Future Challenges in Indonesia, Sri Lanka, Thailand and the Maldives. *Pure and Applied Geophysics*, 172(12). <https://doi.org/10.1007/s00024-015-1134-6>
- [5] Bullard, G. K., Mulligan, R. P., Carreira, A., & Take, W. A. (2019). Experimental analysis of tsunamis generated by the impact of landslides with high mobility. *Coastal Engineering*, 152. <https://doi.org/10.1016/j.coastaleng.2019.103538>
- [6] Lee, C., Doocy, S., Deli, A., Kirsch, T., Weiss, W., & Robinson, C. (2014). Measuring impact: A cross-sectional multi-stage cluster survey to assess the attainment of durable solutions in post-tsunami Aceh, Indonesia. *BMC Public Health*, 14(1). <https://doi.org/10.1186/1471-2458-14-1168>
- [7] Marietta, N. D., & Sudirman, A. (2021). International Regime Approach in the Development of Indonesia's 2004 Post-Aceh Earthquake and Tsunami Disaster Regulations. *Jurnal Global & Strategis*, 15(2). <https://doi.org/10.20473/jgs.15.2.2021.237-254>
- [8] Hülssiep, M., Thaler, T., & Fuchs, S. (2021). The impact of humanitarian assistance on post-disaster social vulnerabilities: some early reflections on the Nepal earthquake in 2015. *Disasters*, 45(3). <https://doi.org/10.1111/disa.12437>
- [9] McCaughey, J. W., Daly, P., Mundir, I., Mahdi, S., & Patt, A. (2018). Socio-economic consequences of post-disaster reconstruction in hazard-exposed areas. *Nature Sustainability*, 1(1). <https://doi.org/10.1038/s41893-017-0002-z>
- [10] Adamy, A. (2021). Leaving Problematic Assets Behind: Lessons from Post-tsunami Reconstruction in Aceh. *IOP Conference Series: Earth and Environmental Science*, 682(1). <https://doi.org/10.1088/1755-1315/682/1/012007>
- [11] Armia, M. S. (2017). The Impact of UK Aid in Support of Disaster Risk Reduction Program in Indonesia. In *Technological Forecasting & Social Change* (Vol. 104).
- [12] Rostam, K., Herman, I., & Mohd Noor, A. B. (2009). Kawasan penempatan semula mangsa tsunami di Malaysia: Analisis kualiti kejiwaan dan kesejahteraan isi rumah. *Geografia - Malaysian Journal of Society and Space*, 5(1).
- [13] Samuels, A. (2013). "Aceh thanks the world": The possibilities of the gift in a post-disaster society (Respond to this article at <http://www.therai.org.uk/at/debate>). *Anthropology Today*, 29(4). <https://doi.org/10.1111/1467-8322.12043>
- [14] Zikri, I. (2017). Social transformation and the change of community capacity of Post-Tsunami Aceh, Indonesia. *Pertanika Journal of Social Sciences and Humanities*, 25(3).
- [15] Waizenegger, A., & Hyndman, J. (2010). Two solitudes: Post-tsunami and post-conflict Aceh. *Disasters*, 34(3). <https://doi.org/10.1111/j.1467-7717.2010.01169.x>
- [16] Shimada, G. (2015). The role of social capital after disasters: An empirical study of Japan based on Time-Series-Cross-Section (TSCS) data from 1981 to 2012. *International Journal of Disaster Risk Reduction*, 14. <https://doi.org/10.1016/j.ijdr.2015.09.004>

- [17] Saukani, N., & Ismail, N. A. (2019). Identifying the Components of Social Capital by Categorical Principal Component Analysis (CATPCA). *Social Indicators Research*, 141(2). <https://doi.org/10.1007/s11205-018-1842-2>
- [18] Mpundu, M. (2022). Analysis of Farming Contribution to Economic Growth and Poverty Alleviation in the South African Economy: A Sustainable Development Goal Approach. *International Journal of Economics and Financial Issues*
- [19] Rahnema, M., Fawaz, F., & Gittings, K. (2017). The effects of foreign aid on economic growth in developing countries. *The Journal of Developing Areas*, 51(3). <https://doi.org/10.1353/jda.2017.0066>
- [20] Sina, D., Chang-Richards, A. Y., Wilkinson, S., & Potangaroa, R. (2019). A conceptual framework for measuring livelihood resilience: Relocation experience from Aceh, Indonesia. *World Development*, 117. <https://doi.org/10.1016/j.worlddev.2019.01.003>
- [21] Napitupulu, B. E., Umaeroh, M. U., Dewi, S., & Listiyowati, D. (2021). Pengaruh independensi, pengalaman kerja, dan etika profesi auditor terhadap kualitas audit pada kantor akuntan publik di Jakarta Pusat. *JISAMAR (Journal of Information System, Applied, Management, Accounting and Research)*, 5(2), 367-378.
- [22] Dolu, A., & İkizler, H. (2023). The effects of major earthquakes on the labor market: evidence from Turkey. *International Journal of Social Economics*, 50(5). <https://doi.org/10.1108/IJSE-08-2022-0568>
- [23] Hameiri, S., & Scarpello, F. (2018). International development aid and the politics of scale. *Review of International Political Economy*, 25(2). <https://doi.org/10.1080/09692290.2018.1431560>

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