



# The Effect of Economic Growth and Poverty on the Environmental Quality Index in the East Region of Indonesia

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## Abstract

Economic growth initially increases environmental damage, but in the long term, economic growth can reduce environmental damage. Poverty is one of the factors causing environmental damage. This study uses quantitative analysis methods. The type of data used is panel data regression from 12 provinces in eastern Indonesia with fixed model to analyze the effect of economic growth and poverty on the environmental quality index in 2015-2019. The data were analyzed using E-Views 10. The results showed that economic growth had a negative and insignificant effect on the environmental quality index and poverty had a negative and significant effect on the environmental quality index in eastern Indonesia.

**Key Words:** Economic Growth, Poverty, Environmental Quality Index

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## Introduction

Economic growth is important in the context of a country's economy because it can be one measure of the nation's economic growth or achievement, one of the important indicators to determine the overall condition of economic growth. national product in a certain period through Gross Domestic Product (GDP) which can be seen through GDP at current prices and constant prices.

Therefore, efforts to increase the role and contribution of a sector to GDP continue to be carried out, including through optimizing the use of natural resources and the environment produced by an area that describes a real impact of the development policies implemented, especially policies in the economic sector. Rapid economic growth is generally followed by environmental damage. Economic growth demands an increase in the production of goods or services so that the needs of the community can be met and can reach the needs of the wider community. But in reality, Economic growth causes a reduction in natural resources and causes environmental damage

caused by externalities in the production and consumption processes. The existence of limitations in the management of natural resources and the provision of these factors causes the amount of Gross Regional Domestic Product to vary between provinces.

One approach to examine the problem of economic growth with environmental quality is the Environmental Kuznets Curve (EKC) theory. This theory explains the longterm relationship of how the economy is able to reverse the environmental damage caused by economic activity. The EKC hypothesis was first used by Grossman, GM (1994) to explain the relationship between per capita income and environmental quality as a result of free trade in North America. Their research shows that the form of the relationship between the level of environmental degradation and income per capita follows an inverted Ushaped pattern as does the pattern of the relationship between income inequality and per capita income in the Kuznets curve.

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The increase in per capita income will continue to increase along with the increase in environmental damage to a certain point.

Indonesia's population of more than 110 million still lives in poverty with an income of less than US\$ 2 per day, even though most of the poorest people in Southeast Asia live in Indonesia (UNDP report, 2007). Poverty is one of the triggers for extraordinary environmental pressures. Environmental degradation and damage are difficult to avoid when the population is still in poverty.

## Literature Review

### Economic growth and environmental quality index

#### The Environmental Kuznets

Curve hypothesis proposed by Grossman and Krueger in 1995, which explains the relationship between economic growth and environmental damage which forms an inverted U curve model formed as a result of economic growth in Initially increasing environmental damage, but in the long run, economic growth that reduces environmental damage.

Panayotou (2000) in his research describes the relationship between the stages of economic development and environmental degradation in the form of a Kuznet curve known as the Environmental Kuznet Curve (EKC) which is divided into three stages, in the first stage, economic development will be followed by an increase in environmental damage known as preindustrial economics, the second stage is known as industrial economics, and the third stage, known as post-industrial economics (service economy).

Fauzi & Oxtavianus (2014) in their research using a balance between the dimensions of development techniques, as a preferred scenario, sustainable development in Indonesia reaches about two-thirds of the maximum target. The high progress in the economic and social fields was eventually corrected by environmental degradation.

The increasing role of the industrial sector in a country's economy will lead to an increase in pollution in that country. In the next stage, the economic transformation will occur in the form of a movement from the industrial sector to the service sector. This movement will be followed by a decrease in pollution which is in line with an increase in income. In addition, the increase in

demand for environmental quality goes hand in hand with an increase in income.

In turn, an increase in income will be followed by an increase in the community's ability to pay for environmental losses caused by economic activities. So according to Andreoni & Levinson (2001), this stage is also marked by the emergence of the community's willingness to sacrifice the consumption of other goods in order to protect the environment.

Grossman, GM (1994) mentions that economic growth in the early stages leads to a phase of environmental degradation. Furthermore, the increase in income will lead to the phase of improving the quality of the environment.

### Poverty and Environmental Quality Index

Poverty is one of the triggers for tremendous pressure on the environment. Environmental degradation and damage are difficult to avoid when the population is still in poverty. The intensity of resource use is getting higher because this is the only place to depend on for survival in poor conditions.

Poverty refers to the number of people who are unable to obtain adequate resources to meet their basic needs (Todaro & Smith Stephen, 2011).

Poverty is one of the main causes of environmental degradation in poor countries and degradation will continue if poverty cannot be reduced (Koçak et al., 2019).

This is in line with Khan (2019), his research conducted in ASEAN countries in 2007-2017 found that the poor tend to increase environmental degradation such as increasing CO2 emissions. biological (Department of Foreign Affairs, 2005). The rural poor are generally directly involved with activities in agriculture and are local natives, working as subsistence farmers with low wages (Todaro & Smith Stephen, 2011). The majority of poor people living in rural areas have no choice but to exploit the available resources to survive (Finco, 2009).

Thus personal survival takes precedence over concern for environmental sustainability in the future. Khalid Zaman et.,al (2010) who conducted research in Pakistan in 1980-2009 found that poverty in rural areas in the long term will reduce environmental quality such as water availability, energy consumption and on agricultural land.



Research on poverty and environmental degradation has been conducted in Indonesia. Dariah (2007) analyzes the two-way relationship between environmental quality and poverty simultaneously. The results showed a simultaneous relationship between economic growth, poverty, income inequality, and environmental degradation. Kartiasih & Pribadi (2020) analyze the effect of poverty on the environment and on the contrary found that poverty affects the environment but not vice versa. This study develops the Kartiasih & Pribadi research (2020) by dividing poverty into urban and rural groups. Previous studies used a proxy for CO2 emissions to measure environmental degradation, while this study used an environmental quality index as a description of the overall state of the environment (Agung et al., 2018). The Environmental Quality Index (IKLH) consists of 3 indicators, namely: Water Quality Index (IKA), Air Quality Index (IKU), and Land Cover Quality Index (IKTL).

Therefore, this study wants to see the effect of poverty in urban and rural areas on environmental quality. In addition, it aims to determine the effect of income inequality on environmental quality. According to data from BPS, the depth and severity of poverty in rural areas is more severe than in urban areas (Wiranto, 2003). Poverty is divided

into absolute poverty to measure it using parameters that are based on expenditure equivalent to rice per capita (Sajogyo, 1982, BPS and Bangdes, 1990) and relative poverty to measure often using the Gini Ratio according to the World Bank benchmark (Hananto, 1987, Rusli, 1995).

**Methods**

This research uses quantitative analysis method with panel data regression method, to support the analysis, Microsoft Office Excel and Eviews 10 are used to simplify the calculation and data estimation, with fixed effects analysis techniques. Data were obtained from the Central Statistics Agency and the Ministry of Environment and Forestry of the Republic of Indonesia. The type of data used is secondary data, panel data in the form of time series data from 2015 to 2019 and cross section from 12 provinces in eastern Indonesia.

**Results and Discussion**

**Research Data Processing**

In this study, the results of data processing based on several tests, including the results of descriptive statistical tests, Chow tests, Hausman tests and regression results can be seen in the following table

**Table 1. Descriptive statistical results**

Mean	6.161833	15.37067	73.73283
Median	6.190000	14.15500	74.51000
Maximum	21.76000	28.40000	91.50000
Minimum	-4.500000	6.220000	56.53000
Std. Dev.	3.981706	6.349594	7.887579
Skewness	1.320123	0.449340	-0.114458
Kurtosis	9.273475	2.219219	2.542217
Jarque-Bera	115.8185	3.543114	0.654919
Probability	0.000000	0.170068	0.720753
Sum	369.7100	922.2400	4423.970
Sum Sq. Dev.	935.3849	2378.723	3670.620
Observations	60	60	60

Source: Data processed, 2022

The results of the descriptive statistical test of this study are that the standard deviation value is smaller than the average value which indicates the

variables of economic growth, poverty and the environmental quality index are normally distributed.



**Table 2. Chow Test Results**  
**Test cross-section fixed effect**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	9.226742	(11,46)	0.0000
Cross-section Chi-square	69.908831	11	0.0000

Source, Data processed in 2022

Based on the estimation results of the chow test, Chi square (0.0000 <0.05) so that fixed effect is a better model than the common effect the prob value is obtained.

**Table 3. Hausman Test Results**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.
Cross-section random	7.890538	2

Source, Data processed in 2022

Based on the estimation results of the chow test, random effect the prob value is obtained. Chi square (0.0193 <0.05) so that fixed effect is a better model than

**Table 4. Regression results**

Variable	Coefficient	Std. Error	t-Statistic
C	106.9058	12.08079	8.849235
X1	-0.050301	0.200106	-0.251370
X2	-2.138032	0.800735	-2.670087

Source, Data processed in 2022

Based on the results of data analysis, the research equation is as follows:  $Y = 0.200 - 0.503 X1 - 2.138 X2$  which can be interpreted, a constant of 0.200 states that the value of exogenous variables is considered constant, so the environmental quality index in eastern Indonesia is 0.200. The regression coefficient of the economic growth variable is -

0.050, meaning that an increase in the value of economic growth by 1 percent will suppress the environmental quality index by 0.050 percent. The regression coefficient for the poverty variable is - 2.138, meaning that an increase in the value of poverty by 1 percent will suppress the environmental quality index by 2.138 percent



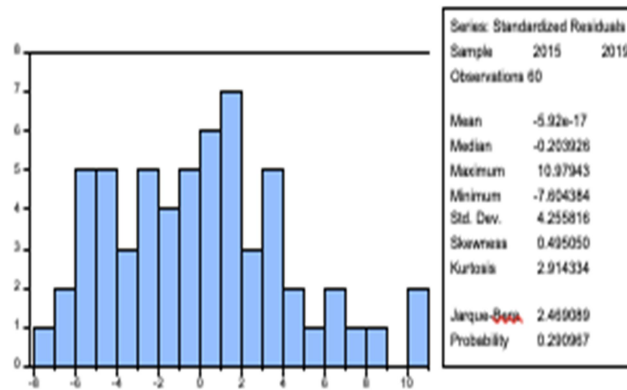


Figure 1. shows the results of the normality test, where the probability value is 0.290967 which is greater than the 5% significance level so that the model is normally distributed

Table 5. Multicollinearity Test

	X1	X2	Y
X1	1.000000	-0.277861	-0.197931
X2	-0.277861	1.000000	0.213904
Y	-0.197931	0.213904	1.000000

Source, Data processed in 2022

The multicollinearity test results show that there is no independent variable that has a high correlation (0.9) so it can be concluded that the model does not experience multicollinearity symptoms

### Conclusion

The conclusion from the results of the research above can be concluded that Economic Growth has a negative and insignificant effect on the environmental quality index and poverty has a negative and significant effect on the environmental quality index, this will have the implication that any increase in the poverty rate will reduce the environmental quality index in eastern Indonesia because poverty is one of the causes of poverty. factors causing environmental damage

### Recommendations

Every country expects a high level of economic growth, but the high rate of economic growth is followed by environmental damage. Therefore, the government is expected to pay attention to the adoption of environmentally friendly technologies in the economy, if so, economic growth will be followed by improvements in environmental

quality. Poverty is still a problem in Indonesia, poor people tend to overexploit natural resources because it is seen as a last resort to survive, on this basis it is hoped that the government will be able to create job opportunities, increase income and improve their distribution

### Research Limitation

This research was conducted inseparable from several limitations, namely 1) the research context space is still limited in eastern Indonesia, 2) this research only uses 2 free variables, namely economic growth and poverty so that subsequent researchers can use other related variables so that this research can be further developed and make an optimal contribution to government policies to support sustainable development goal

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