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The impact of the provincial minimum wage on environmental quality in indonesia

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Abstract: This research aims to determine the relationship between provincial minimum wages, poverty, unemployment, and income inequality to the environmental quality index (EQI). This research also aims to demonstrate if the Environmental Kuznet Curve (EKC) hypothesis is applicable in Indonesia. This research utilized secondary data collected from 33 provinces in Indonesia between 2012 and 2021. This research used panel regression with Fixed Effect Model (FEM) as the research method. The research results indicated that the provincial minimum wages and poverty positively and significantly affected the EQI. The results also demonstrated that the EKC hypothesis holds true in Indonesia, as illustrated by the significance of the GRDP per capita and GRDP per capita squared. Meanwhile, this research showed that unemployment and income inequality did not significantly impact the environmental quality index. This study offered a new analysis on the impact of provincial minimum wage on EQI in Indonesia. Therefore, this study has contributed to the additional information to the body of knowledge. The government needs to strive for an increase in the development and use of environmentally friendly products, as well as optimization of environmental protection programs. In addition, government needs to increase the provincial minimum wage according to limits set to improve environmental quality. The limited variables and research methods used are expected that further research can complement this study.

Keywords: Environmental Quality Index; Environmental Kuznet Curve Hypothesis; Economic Development; Economic Growth
JEL Classification: O44; Q56

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Introduction

Indonesia is one of the fastest-growing economies in Southeast Asia in the first quarter of 2019 (Azwardi *et al*, 2022). This suggests that Indonesia's economy is doing well, which will lead to faster economic development. The good results of economic progress, however, really have a bad effect on the state of the environment. According to Sumarni (2019), as a result of the unrestrained use of natural resources, Indonesia's rapid economic expansion may cause a decline in environmental quality. In line with this, according to Pertiwi *et al* (2021), as a result of economic activity, environmental quality suffers as a result of economic expansion. Therefore, Chen *et al* (2021), according to his research, improving the quality of life through economic expansion while also protecting the environment is a major challenge. According Rifa'i and Dewi (2018) even while economic

expansion and the associated impact on the environment expand simultaneously, there is a trade-off between the two.

In addition to human activities, a nation's development activities can contribute to a decline in environmental quality (Noormalitasari & Setyadharma 2021). According to Zhu *et al* (2022), development is the enhancement of a community's quality of life and well-being via the provision of access to resources to which it is entitled. One of the indications of economic development is economic growth accompanied by improvements in economic and social structure. Not just strong economic growth, but also income disparity, equitable investment, enough employment opportunities, and low poverty rates are necessary for a nation's economic development to be successful (Nuraini & Hariyani, 2019). Development is seen successful if it emphasizes indicators of sustainable development, notably by paying close attention to social and environmental factors (Kartiasih & Pribadi, 2020). According to Pertiwi *et al* (2021), if development just seeks to improve social welfare and is improperly carried out, it will have a detrimental effect on the biological systems of all organisms.

Some developing countries frequently encounter a variety of significant environmental concerns, such as climate change and risks to natural and biological resources (Masron & Subramaniam, 2018). This issue also exists in the growing nation of Indonesia. According to KLHK (2020), Indonesia had a decline in the amount of wooded land from 95.7 Ha in 2014 to 94.1 Ha in 2019 throughout that time period. This is because different sections of Indonesia's forests have been damaged as a result of changing land use. Jambeck *et al* (2015), according to his findings, Indonesia really contributes the second-highest amount of plastic debris to the ocean behind China. The marine biodiversity of Indonesia may be threatened and harmed by the pollution of the sea by plastic garbage. In addition, environmental quality in various provinces of Indonesia is unequal. Several provinces in western Indonesia have a high alert level and poor environmental quality, whereas regions in eastern Indonesia have excellent environmental quality (Sumargo & Haida, 2020). Even Jakarta, Indonesia's capital and economic center, was requested to be the city with the worst environmental pollution (Azwardi *et al*, 2022).

Table 1 The Water Quality Index, Air Quality Index, Land Cover Quality Index, and Environmental Quality Index Indonesia 2012-2021

Year	Water Quality Index	Air Quality Index	Land Cover Quality Index	EQI
2012	54,58	79,61	59,26	63,96
2013	51,82	80,17	59,01	63,20
2014	52,19	80,54	59,01	63,42
2015	65,86	83,84	58,30	68,23
2016	60,38	81,61	57,83	65,73
2017	58,68	87,03	56,88	66,46
2018	72,77	84,74	61,03	71,67
2019	52,62	86,56	62,00	66,55
2020	53,53	87,21	59,54	70,27
2021	52,82	87,36	60,72	71,45

Source: Ministry of Environment and Forestry of the Republic of Indonesia (2021)

The Environmental Quality Index (EQI) released by the Ministry of Environment and Forestry of the Republic of Indonesia is used to quantify environmental quality in Indonesia. The EQI is an indicator that describes the status of the national environmental management outcomes from all provinces in Indonesia. It comprises the Water Quality Index, Air Quality Index, and Land Cover Quality Index (Ministry of Environment and Forestry, 2019).

Although in 2021 the Environmental Quality Index (EQI) in Indonesia increased compared to 2012, the achievement over the past ten years from 2012 to 2021 did not always experience an increase each year, but only showed a tendency to increase. This condition means that EQI achievements still did not meet the expected targets, and there were still obstacles to improving the EQI in Indonesia. This also applied to the indicators that make up the EQI itself, where the Water Quality Index, Air Quality Index, and Land Cover Quality Index also experienced fluctuating development from 2012 through 2021.

The Water Quality Index over the past ten years has actually shown a decreasing trend. This decline is due to household activities, large industries, small-scale businesses, and agricultural and livestock activities, resulting in high water pollution levels. Meanwhile, the Air Quality Index experienced a significant increase in 2020, amounting to 3,37 points, but there were still decreases in some years such as 2016 and 2018. This decline indicates that there are still problems in controlling air pollution in Indonesia. In addition, the Land Cover Quality Index also experienced fluctuating development during the period of 2012-2021. This is due to various problems found in the field related to the damage of forest and land areas that affect the quality of land cover in Indonesia.

The environmental Kuznets curve (EKC) is a hypothesis that explains the relationship between environmental quality proxies and per capita income proxies and has an inverted U shape (Setyadharma *et al,* 2020). This is due to the fact that during the early stages of development environmental concerns were ignored and environmentally friendly energy sources were not readily available. As a result of economic growth, an understanding of environmental quality maintenance became crucial during the subsequent stages of development advancing science and engineering (Nuansa & Widodo, 2018). Therefore, an inverted U-curve exists between economic expansion and environmental deterioration according to the EKC hypothesis. Research Darwanto *et al* (2019) argued that the EKC hypothesis demonstrated a process of structural transformation concurrent with economic growth.

The relationship between poverty and other areas of life includes the environment. According to Tasri *et al* (2022), poverty, as one of the economic variables, impacts the quality of the environment. Research conducted by Baloch *et al* (2020), in Sub-Saharan African nations, rising poverty has an effect on rising CO2 emissions. Efforts to reduce poverty are therefore declared a development priority in both developing and rich nations, even as the first Sustainable Development Goal. According to Mansi *et al* (2020), due to the vast quantity of natural resources required to satisfy human needs, the exodus of poor people can be detrimental to the environment. This statement contradicts the findings of research by Heger *et al* (2018) who discovered that when the quality of the

environment improves, the buildup of trash accelerates and becomes more significant. Based on data from the Central Statistics Agency from 2012 to 2021, the number of poor people in Indonesia has shown a decreasing trend, where in 2012 the percentage of poor people in Indonesia reached 11,66 percent, and in 2021 it was 9,71 percent. The decrease in poverty rates in Indonesia is due to the success of poverty reduction programs implemented by the government.

In tandem with a rise in economic growth, employment possibilities are rising and the rate of violence is falling, which has a detrimental effect on the environment (Zulfikar *et al,* 2021). Unemployment is a development issue that is also tied to environmental quality. Unemployment happens when the number of available jobs does not match the size of the work force. One-third of jobs in G20 nations are impacted by environmental sustainability and good management, therefore the world of work is intrinsically tied to the natural environment (ILO, 2018). The open unemployment rate reveals the level of unemployment in Indonesia, as it represents the proportion of jobless to the work force (BPS - Statistics Indonesia, 2020). During the period from 2012 to 2019, unemployment in Indonesia showed a tendency to decrease. However, as a result of the pandemic that occurred, in 2020 the unemployment rate in Indonesia experienced a significant increase, even exceeding the unemployment rate in 2015.

Additionally, economic activity influences the degradation of environmental quality (Setyadharma *et al*, 2021; A'yun & Khasanah, 2022). Consumption is one of the economic activity that impedes the development of environmental quality. According to Salo *et al* (2021), in order to reduce the effects of climate change, household spending habits must be taken into account. Ivanova *et al* (2016) more than 60% of greenhouse gas emissions are a result of home use, hence special consideration must be given to the environmental effects created. Wage income is one of the necessary prerequisites for consumption. The magnitude of a person's earnings affects his or her consuming behavior. Wage receipts in Indonesia are partly determined by the provincial minimum wage set by the government. Therefore, a research must be conducted to assess how the provincial minimum wage affects environmental quality.

The Sustainable Development Goals also evaluate the environmental consequences of economic disparity (Hasan *et al*, 2021). Although income inequality in Indonesia during the period fromed to decrease, the inequality that occurs in various regions of Indonesia still remains a prthat must be addressed. Like poverty, if inequality is not reduced immediately, it can have an increasingly significant impact on the environment. Because income inequality is believed to have an impact on the quality of the environment, income inequality and sustainable development are interrelated. Both are reflected in the Sustainable Development Goals where income inequality and increasing environmental degradation pose serious threats to human well-being (Baloch *et al*, 2020).

The condition of the Indonesian economy shows an increasingly positive trend. Problems such as poverty, unemployment, and income inequality have tended to decrease, which should have a positive impact on environmental quality. However, on the other hand, there are still various environmental issues in Indonesia that need to be addressed. Given

these problems, this study aims to determine the impact of provincial minimum wage, poverty, unemployment, and income inequality on environmental quality in Indonesia, and to test whether the EKC hypothesis holds true there. It is crucial to conduct this research since environmental concerns are not given sufficient consideration in developing nations (Masron & Subramaniam, 2018). Related study is still rarely performed. Therefore, further study is needed to determine how economic activities influence environmental quality. In addition, this study offers a new analysis of the impact of provincial minimum wages on EQI in Indonesia. Because, to the best of our knowledge, no research has ever been completed to examine the influence of the provincial minimum wage on environmental quality in Indonesia. Therefore, this study contributes the additional information to the body of knowledge.

Research Method

This research provided use of secondary data in the form of panel data, specifically a combination of time series and cross section data from 33 provinces in Indonesia (excluding North Kalimantan) from 2012 to 2021, obtained from the BPS - Statistics Indonesia and the Ministry of Environment and Forestry of the Republic of Indonesia in 2022. The Environmental Quality Index was the dependent variable, whereas the provincial minimum wage, GRDP per capita, percentage of poor people, open unemployment rate, and gini index were the independent variables. The following table provides an explanation for each variable employed.

Table 2 The Variables Used in the Model

Variable	Definition	Source
Environmental Quality Index	A generalization of Indonesia's environmental circumstances using the water quality index, air quality index, and land cover quality index	Ministry of Environment and Forestry (2022)
Provincial Minimum Wage	The amount of the minimum wage applicable in all Indonesian provinces (rupiah)	BPS - Statistics Indonesia (2022)
GRDP per capita	The ratio of the value of GRDP to the total population of an area over a specific time period is known as GRDP per capita at constant prices (thousands of rupiah)	BPS - Statistics Indonesia (2022)
Percentage of Poor People	Percentage of people living in poverty (percent)	BPS - Statistics Indonesia (2022)
Open Unemployment Rate	Unemployment rate as a proportion of the total work force (percent)	BPS - Statistics Indonesia (2022)
Gini Index	The gini index is used to measure the degree of inequality in population distribution.	BPS - Statistics Indonesia (2022)

The method of panel data regression was selected as the analytical tool, thus it was required to choose the optimal model. To assess the relationship between economic growth and environmental deterioration, the econometric model derived from the EKC hypothesis employs a quadratic form (Setyadharma *et al*, 2020). The trade-off that arises

between environmental quality and economic growth is described by quadratic regression modeling (Sari, 2022). This is the econometric model that was used:

$$\mathrm{LOG(EQI)_{it}} = \propto_0 + \beta_1 \mathrm{LOG(WAGE)_{it}} + \beta_2 \mathrm{LOG(GRDPpercapita)_{it}} + \beta_3 \mathrm{LOG(GRDPpercapita)^2_{it}} + \beta_4 (\mathrm{POV})_{it} + \beta_5 (\mathrm{UNEMP})_{it} + \beta_6 \mathrm{LOG(GINI)_{it}} + e_{it}$$

In the econometric model above, EQI is environmental quality index; WAGE is provincial minimum wage, GRDPpercapita is Gross Regional Domestic Product per capita, GRDPpercapita² is the quadratic form of Gross Regional Domestic Product per capita, POV is percentage of poor people, UNEMP is open unemployment rate, GINI is gini index, Log is logarithm function, i and t are provinces and periods (2012-2021), $\propto_0$ is the constant, $\beta_1 \ldots \beta_6$ is the coefficient of the independent variables, and e_{it} is the error term.

Result and Discussion

The aims of this research, which employed a quantitative strategy in the form of panel data regression, was to demonstrate the validity of the EKC hypothesis in Indonesia and to ascertain the impact of various variables on the EQI in Indonesia, including provincial minimum wage, poverty, unemployment, and income inequality. The data utilized was secondary data from 33 provinces in Indonesia from 2012 to 2021 obtained from the Ministry of Environment and Forestry of the Republic of Indonesia for 2022 and the Central Statistics Agency. The descriptive statistic for each of the utilized variables is as follows.

Table 3 Descriptive statistics

	EQI	GRDP per capita	POV	UNEMP	WAGE	GINI
Means	67.59327	38483.58	11.31206	5.326818	1958966	0.362536
Median	69.22500	29617.78	10.16000	4.930000	1898184	0.360500
Maximum	91.50000	174963.0	31.53000	10.95000	4416186	0.459000
Minimum	35.66000	10030.98	3.420000	1.400000	745000.0	0.247000
std. Dev	9.757518	30047.36	5.917635	1.982110	683601.2	0.039841
Skewness	-0.668872	2.653689	1.018798	0.696390	0.462090	0.083919
kurtosis	3.568285	10.01011	3.711943	2.954109	2.977315	2.650152
Jarque-Bera	29.04699	1063011	64.05659	26.70173	11.75109	2.070241
probability	0.000000	0.000000	0.000000	0.000002	0.002807	0.355184
sum	22305.78	12699582	3732.980	1757.850	6.46E+08	119.6370
Sum Sq. Dev	31323.81	2.97E+11	11521.06	1292.562	1.54E+14	0.522236
Observations	330	330	330	330	330	330

Table 3 shows that the observations in this study totaled 330. The average EQI was 67.59 with a maximum value of 91.50 and a minimum value of 35.66. The average value of GRDP per capita was 38483.58, while the maximum and minimum values were 174963.0 and 10030.98, respectively. Percentage of poor people had an average of 11.31206, a maximum value of 31.53000, and a minimum value of 3.420000. The open unemployment

rate value ranged from 1.40 to 10.95, with an average value of 5.326818. With an average value of 1958966, a maximum value of 4416186, and a minimum value of 745000.0, these numbers represented the provincial minimum wage. The minimum and maximum values of gini index were 0.247000 and 0.459000, respectively, while the average is 0.362536.

There were three tests that must be passed to get the best model between the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), i.e., Chow test, Haussman test, and Lagrange Multiplier test. The acquisition of the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM) was carried out through a Chow test. In the Chow test, H0 predicts that if the probability value is > 5%, the CEM model will be the best model, while H1 predicts that if the probability value is < 5%, the FEM model would be the best model. Table 4 reveals that the probability is 0.0000, or < 5% significance, indicating that H1 was accepted and H0 was rejected. As a result of the Chow test, we can infer that the Fixed Effect Model (FEM) was the best model.

Table 4 Chow Test Results and Haussman Test

***Chow* test**		
Effect Test	Statistics c	Prob.
Cross-section F	26.573095	0.0000
***Haussman* test**		
Test Summary	Chi-Sq. Statistics	Prob.
Random cross-sections	23.282046	0.0007

The Haussman test was then performed to determine the best model between FEM and REM. H0 indicated that REM was the best model if the result probability was > 5%, whereas H1 stated that FEM was the best model if the probability was < 5%. The findings presented in the Table 4 indicated that the probability value was 0.0000, or <5%. Therefore, H0 was rejected and H1 was accepted, so the optimal model was the Fixed Effect Model (FEM). Based on the findings of the Chow test and the Haussman test, it can be stated that the Fixed Effect Model was the most appropriate model for this research (FEM). Here is the estimation outcome Fixed Effect Model (FEM) with the Generalized Least Square method.

The estimation results of the Fixed Effect Model (FEM) in Table 5, the R-Squared value was 0.841969, meaning that 84,19% of the variation in the environmental quality index variable can be explained by the variation in the set of variables including provincial minimum wage, GRDP per capita, the percentage of the poor population, the open unemployment rate, and gini index. While the 15.81% was explained by variations in other variables outside the model. The probability value of the F-Statistics test was 0.000000, which can be seen from the F-Statistics test results in Table 5. This number was significant at $\propto =5$ percent. Thus, together, the variables of provincial minimum wage, GRDP per capita, the percentage of the poor people, the open unemployment rate, and gini index significantly affected EQI. Meanwhile, the t-statistics in Table 5 explains that there were several independent variables that did not have a statistically significant effect on the environmental quality index, namely the open unemployment rate and the gini index, because the calculated t-values of these variables were higher than α = 5%.

Table 5 Estimation Results Fixed Effect Model (FEM) with the Generalized Least Square Method

Variable	Coefficient	Std. error	t-Statistics	Prob.
C	15.85808***	3.286694	4.824933	0.0000
LOG(WAGE)	0.140216***	0.021546	6.507628	0.0000
LOG(GRDPpercapita)	-2.703686***	0.670790	-4.030603	0.0001
LOG(GRDPpercapita)^2	0.131755***	0.034543	3.814243	0.0002
POV	0.011875**	0.004713	2.519667	0.0123
UNEMP	0.002337	0.004602	0.507921	0.6119
LOG(GINI)	-0.003638	0.052254	-0.069627	0.9445
R- squared	0.841969	F-statistic	40.80016	
Adjusted R-squared	0.821332	Prob(F-statistic)	0.000000	

Note: *** significant at α = 1%; ** significant at α = 5%

This research confirmed that the Environmental Kuznet Curve (EKC) hypothesis applied in Indonesia. This was evidenced by the significant results of the per capita GRDP and squared per capita GRDP variables. If GRDP per capita grew by 1%, EQI fell by 2.703686%, and vice versa. Up to the turning point, when Indonesia's per capita GRDP increased by 1%, the environmental quality index also increased by 0.131755%, and vice versa, assuming ceteris paribus. These results strengthened the research by Setyadharma *et al* (2020) and confirmed the EKC hypothesis in Indonesia. Meanwhile, this research did not support study by Iskandar (2019) who found that EKC did not exist in Indonesia. Nonetheless, this research strengthened the research by Sari (2022) who determined that the EKC hypothesis applies to nearly all islands in Indonesia. This finding was also consistent with other studies by Adila *et al* (2021), Prasetyanto and Sari (2021), Bashir *et al* (2021), and Prastiyo *et al* (2020). This verifies the EKC hypothesis's presence in Indonesia.

The turning point in the Environmental Kuznets Curve (EKC) hypothesis can be achieved due to the transformation of the economic structure in Indonesia, from previously relying on the primary sector including agriculture, fisheries, and mining, to now shifting towards the secondary sector such as manufacturing, construction, services, and trade (Prasetyanto & Sari, 2021). This was evidenced by the 2021 Indonesian economic report released by the Central Statistics Agency, in which the agricultural sector became the second largest contributor to Indonesia's economic growth at 13,70% in 2020, just below the manufacturing sector which reached 19,88%. Even in 2017, the contribution of the processing industry to Indonesia's GDP was 20,16%, while the agricultural sector was only 13,16%. The economic transformation that occurred was certainly accompanied by various environmental protection programs in Indonesia. These programs include the green leadership program, waste management, environmental preservation, and environmental development (Rahayu & Handri, 2023). The success and sustainable implementation of these programs will improve the quality of the environment in Indonesia. The improvement of environmental quality, accompanied by an increase in income, is the second stage of economic development described in the Environmental Kuznets Curve hypothesis (Setyadharma *et al* 2020).

The provincial minimum wage had a substantial beneficial impact on the EQI. The estimation findings indicated a value of 0.140216%, which indicated that when the provincial minimum wage increased by 1%, there was a substantial increase of 0.140216% in the EQI, assuming ceteris paribus. According to our knowledge, no previous research had described the influence of the provincial minimum wage on environmental quality. Provincial minimum wages in Indonesia tended to increase over the past several years, in which increases were adjusted to economic and employment conditions in each region. This was intended as one of the efforts to improve the welfare of workers. However, the government limited the minimum wage increase to a maximum of 10%. The provincial minimum wage has an impact on an individual's income. Higher salaries encourage environmentally responsible purchase (Setyadharma *et al*, 2020). Therefore, an increase in provincial minimum wage can be one of the steps towards achieving the Sustainable Development Goals. According to Mair *et al* (2019), paying higher wages throughout the global supply chain can be an initial effort in achieving sustainable development. Through his efforts to enhance the condition of the environment, pro-environmental conduct is often possessed by those with a greater wealth (Moser & Kleinhückelkotten, 2018).

Poverty had a positive significant effect on the environmental quality index with a coefficient value of 0.111875. When poverty increased by 1%, EQI increased by 0.111875%, and vice versa assuming ceteris paribus. The results of this study are in line with previous research by Setyadharma *et al* (2020). Meanwhile, this study is not in line with Pertiwi *et al* (2021) and Tasri *et al* (2022) which concluded that poverty does not have an effect on environmental quality index. However, this study differs from the research of Shanty *et al* (2018) ; Noormalitasari & Setyadharma (2021) ; Sumargo & Haida (2020) that concluded that poverty has a negative and significant effect on the environmental quality index. This is a challenge and certainly a dilemma for the government. Because if the government wants to reduce the level of poverty in Indonesia, then the government must also accept the consequence that environmental quality will decrease.

Unemployment did not have a significant effect on the environmental quality index because the probability value generated was greater than α = 5 percent, which was 0,6119. The results of this study are the same as the research of Adesina & Mwamba (2019). However, this study is not in line with the research Ng *et al* (2022) that concluded that low levels of unemployment have a negative impact on environmental quality in OECD member countries. This study also concludes that income inequality did not have a significant effect on the environmental quality index because the probability value was greater than α = 5 percent, which was 0,9445. The results of this study are in line with previous research by Prasetyanto & Sari (2021) and Hundie (2021). However, this study differs from the research of Pertiwi *et al* (2021) and Noormalitasari & Setyadharma (2021) that concluded that income inequality has a negative effect on the environmental quality index.

Conclusion

The aim of this research was to verify the relationship between provincial minimum wages, poverty, unemployment, and income inequality with the environmental quality index (EQI). This study also aimed to prove whether the Environmental Kuznet Curve (EKC) hypothesis applies in Indonesia. This study used secondary data from 33 provinces in Indonesia which were sourced from the Central Statistics Agency and the Ministry of Environment and Forestry of the Republic of Indonesia. The data used were provincial minimum wages, percentage of poor people, open unemployment rate, gini index, GRDP per capita, and the environmental quality index from 2012 to 2021. The research method used was panel regression with the fixed effect model as the best model.

The estimation results showed that the provincial minimum wage had a significant positive effect on the environmental quality index in Indonesia and indicated that the EKC hypothesis held true in Indonesia, as shown by the statistically significant results of GRDP per capita, followed by the significant results of GRDP per capita squared, which are supported by previous studies. This research also concludes poverty had a significant positive effect on the environmental quality index in Indonesia. However, unemployment and income inequality had no significant impact on Indonesia's environmental quality index.
In accordance with these results, environmental quality maintenance in Indonesia has been well implemented in line with increased economic growth. Therefore, improving the quality of the environment and increasing economic growth in Indonesia must continue. The adoption of environmentally friendly products can be done comprehensively in Indonesia to achieve production efficiency based on sustainable development principles. Additionally, it is necessary to optimize environmental protection programs that have been established to improve the quality of the environment for all Indonesian citizens. The government must also be pushed to enact rules that promote the use of ecologically friendly items without negatively impacting the poor. To improve the quality of the environment in Indonesia, it is also recommended that the government progressively raise the provincial minimum wage which is no more than 10%, and by considering the economic and employment conditions in their respective regions.

There are still limitations in this study, so further studies are expected to comprehensively explain the existence of EKC in Indonesia by involving more complex variables and using other methods and the latest years to complement this study.

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